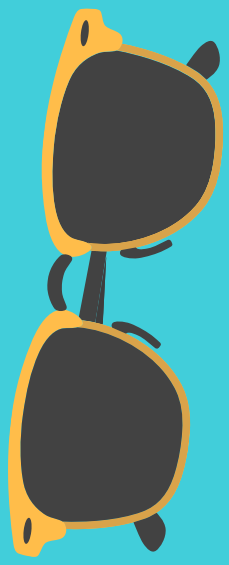

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FCSIT RESEARCH BULLETIN 2016

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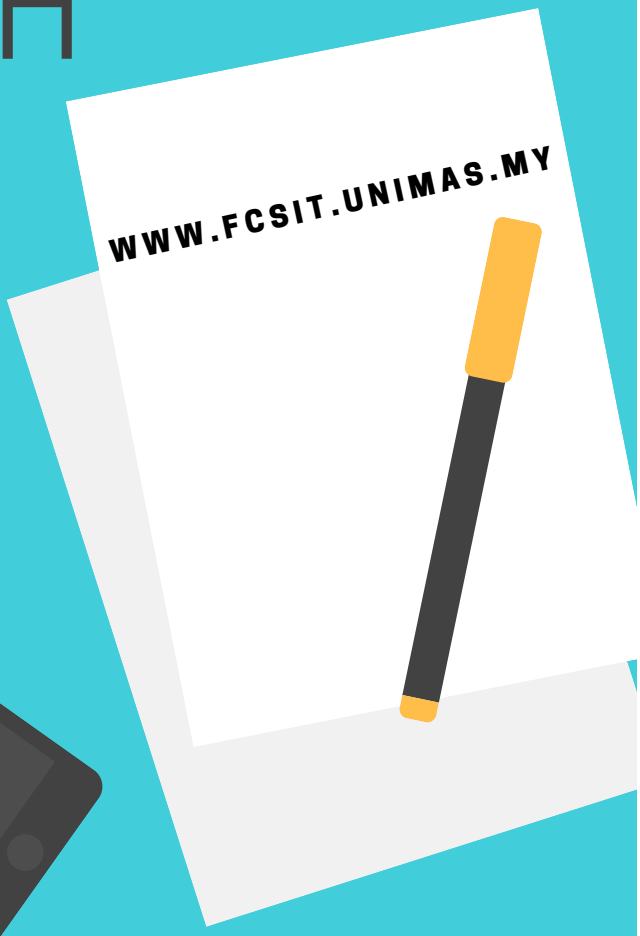

ISSN 2550-1577

FCSIT Research Bulletin 2016

Dean's Message

It is my pleasure to welcome you to our latest issue of the FCSIT Research Bulletin for 2016.

The research at the faculty is progressing well with 53% of lecturers are Principle Investigator for internal and external research grants. Furthermore, there are more than 100 postgraduate students who are actively involved in various research projects in the faculty. Nonetheless, there are also various challenges that we have to face in term of R&D within the faculty, university, nationally, and globally. The key challenge is finding a way to develop and sustain a research and innovation ecosystem in order to promote a strong academic culture where research, teaching, and commercialization are interconnected and equally valued. Furthermore, the fast pace of changes in ICT field require us to be agile and dynamic within the context of research.

The research bulletin covers all research areas in the faculty and seeks to share the latest research activities and finding from various research projects within the faculty. Sharing research finding is key to ensure that the research can benefit others and part and parcel of research activities. I hope that this Research Bulletin will provide information to the readers on our current research activities and will stimulate further research and collaboration in relevant areas.

Finally, I would to express my sincere gratitude to the Editor-in-Chief of this Research Bulletin, Dr. Dayang NurFatimah, the editorial team, and to all contributors to the content within the bulletin, for all your effort in making sure the successful publication of the FCSIT Research Bulletin 2016.

Johari Abdullah

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ISSN 2550-1577

Editor's Note

Dr Dayang NurFatimah Awang Iskandar, Deputy Dean (Postgraduate and Research)

Being a researcher requires inspiration and constant dedication. Maintaining a high level of intensity can be extremely difficult, especially when things don't go as planned. Sometimes it's important to take a step back and get re-inspired about the research work that we had embarked.

The year 2016 had witness FCSIT achievements in several aspects. To mention some, first, FCSIT had the highest number of participation in InTEX'16. In total, FCSIT won 34 medals out of 56 participated projects. This is a record breaking achievement for the faculty. Among the gold medal winners, Dr Johari and his student's final year project was outstanding and won gold medal at SIIF 2016.

Secondly, the number of application for research grants had increased. This indicates that the faculty members have strive their best in obtaining grants even though it is very challenging. I hope FCSIT will continue this spirit for years to come.

"I believe in innovation and that the way you get innovation is you fund research and you learn the basic facts."—Bill Gates

I would like to take this opportunity to thank all the editorial team members who had constantly collected the information. The Head of Departments, ISITI and IMAST also had a significant role in providing the information needed, without them, this research bulletin is impossible.

FCSIT Research Bulletin @ 2016

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Dr Adnan Shahid Khan
Ahmad Hadinata Fauzi
Jonathan Sidi

Printer

(Printing Company details to be included)

Front Page Design

Jonathan Sidi

Editorial Policy

The FCSIT Research Bulletin is an annual publication of the Faculty of Computer Science and Information Technology, UNIMAS. The purpose of FCSIT Research Bulletin is to disseminate information that represent the current state of the research activities, publications, research findings, training, conferences and seminar conducted by the academicians in the faculty.

Credits

FCSIT Research Bulletin@2016 was written using paperTEX and typeset using the LaTeX 2ε document preparation system. We thank: Head of Departments, ISITI, IMAST and all other authors who had contributed their articles.

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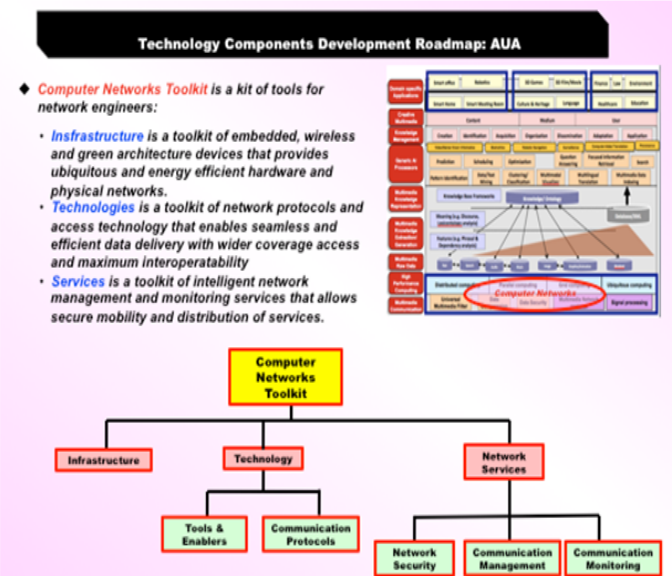
FCSIT RESEARCH CLUSTERS

Network Group: Affordable Ubiquitous Access (AUA)



The research cluster focuses on developing a computer networks toolkit for providing affordable ubiquitous broadband platforms for mobile internet. There are 2 subgroups within the AUA group: 1) Ruralremote Provision of Network Access and 2) Wireless Sensors for Data Acquisition and Monitoring.

The ultimate goal is to provide affordable network access to the very remote areas, where many components of the standard urban infrastructure (towers, power, devices) are clearly not economically viable to be installed. Much cheaper and more efficient alternatives need to be designed, developed and deployed. Such solutions need to be cost saving and sustainable, but yet (ultimately) equivalent to urban installations in terms of services.

Software Engineering Group: Software Engineering Workbench (SEW)

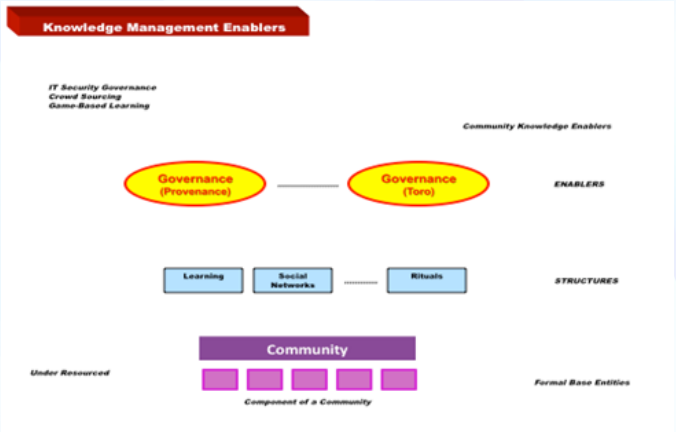
SEW focuses on developing a generic software and application development systems for software architects and developers. The target is to work towards a Software Development Workbench based on specific methodologies in formal objects, in the hope that some level of abstraction can be obtained and thus contribute towards the formulation of the ultimate Workbench. This initiative comprises a group of projects that can be grouped under the title Formal-Object Tool (FOTool). Some of the projects within the group are fundamental in nature, while some are application based. The former may contribute directly to the formulation of the Workbench, while the latter may give further insight into some of the requirements for further research.

Network Security Research Group (NSRG)

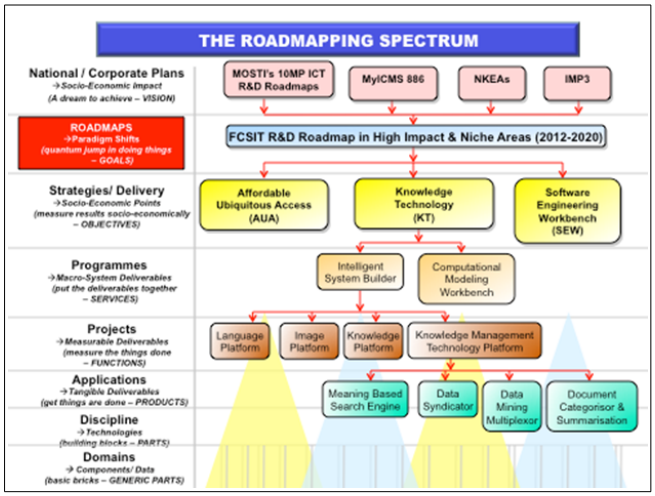
The aim of the NSRG is to carry out network security related research as a group encompass both Network Security as well as Information Security.

Social Informatics Group: Knowledge Management Enablers

This cluster aims at bringing communication and internet accessibility to minority groups in very remote areas. It is not only about technology, but also in the preparation of the indigenous peoples to ensure uptake of the technologies. Many applications also need to be localised to fit their real needs, in terms of content (e.g. healthcare) as well as usage (e.g. pictures, gestures). Of great importance in the projects is duplicability, both for different communities as well as for different application domains. Among the areas to be covered are Language Tools; Repository Development; Indigenous Knowledge Governance Framework; Data Collection and Content Management system for Indigenous Knowledge Governance; Applications for Minority Languages Communities; Software to Bridge the Intergenerational Gap; Language Preservation; Development of a Methodology for Building Software for Rural Areas; Methodologies for Software Development for Illiterate Users; and Indigenous Technological Innovation in Malaysia. The cluster members develop humanistic systems by harnessing human capacity and community systems enabled by societal information management and knowledge governance mechanisms.



Knowledge Technology Group (KT)



The Knowledge Technology Group focuses on developing state-of-the-art tools, modules and content for effective knowledge management, culminating in an intelligent system builder that will expedite the development of intelligent applications. The core to knowledge usage may thus stem from two underlying assumptions which are now made much more plausible with advances in language and knowledge technologies. Text, speech and image (and other multimedia and multimodal data forms) are expressions of knowledge, and as such one should be able to extract and represent knowledge from documents in these modes.Once knowledge is captured and encapsulated, it can be utilised effectively by using knowledge management techniques to support large and intelligent enterprise-level applications. Knowledge Technology (KT) comprises of 2 major subgroups which are (i) Intelligent System Builder and (ii) Computational Modelling Workbench Groups.

Intelligent System Builder (IS)

This cluster studies the development of a generic software tool to develop intelligent systems, with four main (very large) Technology Platforms—Language, Image, Knowledge and Knowledge Management Technology. The first two are for the acquisition of knowledge from various multimedia, multi-modal, multilingual sources (as well as for generating such forms for knowledge dissemination); the third is for knowledge extraction, representation, together with intelligent retrieval services; and the fourth is for the developmentassembly of the actual intelligent systems for users.

Knowledge Management Technology Platform

In essence, the KMT platform is a set of modules to be chosen from and used as components in a targeted intelligent system, preferably in a plug-and-play mode. In other words, for a given targeted intelligent system, one has to basically design and develop the framework and then plug in the chosen modules. As such, these modules will have to be generic in nature, as they will be used in certain applications and then reused in others. Given their nature, there is no necessity to list them out, nor is there a minimum or a limit to their numbers.

Language Technology

The Language Technology Platform Cluster aims to provide an environment where language processing tools and linguistic resources are created, stored, and maintained for further use and sharing. Thus, the main components of the language platform are language processing tools and linguistic resources - being tangible tools, modules and data; and methods or techniques - namely reference material for any development work.

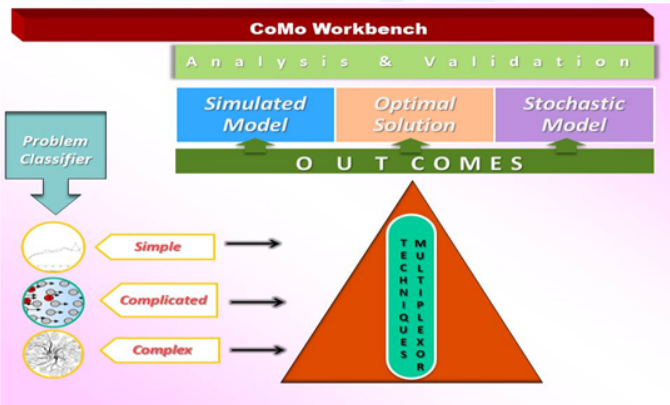
Image Technology

The main research activities are related to Content Based Image Retrieval (CBIR), biometrics, medical images analysis, satellite images interpretation, spatial data acquisition tools, spatial visualisation, spatial modelling and analysis, spatial data mining, environmental and natural disaster, disease control and spatial related problem, and agriculture based management tools.

Knowledge Platform

The Knowledge Platform Cluster focuses on research for developing intelligent systems based on knowledge extraction, representation, together with intelligent retrieval services, by combining multimodal inputs forms.

Computational Modelling Group (CoMo)



Computational Modelling Group aims provide generic software that focuses on a workbench development with 3 top-level modules—Problem Characterisation, Techniques Multiplexor, and Analysis. Problems to be resolved are first characterised by the first module, then a model is formulated using one (or a combination) of the techniques in the second module, and analysed by the third module (which contains many statistical but also other types of analysis modules).

UNIMAS
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SOARING UPWARDS
MALAYSIAN HIGHER EDUCATION

PROF DR NARAYANAN A/L N. KULATHURAMAIYER

Field of expertise

Artificial Intelligence/ Knowledge Management

Contributions

- **Widely recognised as an expert in Web Intelligence and Data mining, both at the national and international levels**
- **Instrumental in shaping the ICT landscape in Malaysia, through his role in National IT Council expert panels on Innovation Ecosystem and Human Capital and ICT Deans Council**
- **Current explorations include Indigenous Wisdom, and the research is paving the way for the design of future Web systems**

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SOARING UPWARDS
MALAYSIAN HIGHER EDUCATION

PROF DR WANG YIN CHAI

Field of expertise

Spatial Data Analysis, Image Processing

Contributions

- Leads a research team at the Center for Image Analysis and Spatial Technologies since 2006
- Leads national and international research and consultation projects amounting to more than RM30 million
- Highly experienced in software development and commercialisation
- Published more than 150 research papers in various journals and proceedings, locally and internationally
- Supervised more than 40 local and international postgraduate students by research (PhD and MSc levels)
- External examiner for Postgraduate students for various local and international universities

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Seoul International Invention Fair 2016 (SIIF 2016) & UNIMAS InTex'16 Gold Winner

CycleSense: Sensor-based Bicycle Safety System

Researchers: Dr. Johari Abdullah and Kho Kai Li

Kho Kai Li with the Gold Medal and certificate at the INTEX'16

In recent years, the number of cyclist on the road in Malaysia is increasing due to various supporting factor such as awareness of health, convenience and lower cost as mode of transportation. Unfortunately, the overall number is still low due to safety concerns on the danger of cycling on public road, which is shared with motorized vehicles. Additionally, bicycle and cyclist safety are not a focus area for road safety programs. Based on the statistics by Malaysian Institute of Road Safety Research (MIROS) (2014), road accidents and fatalities rate for cyclists is high. Thus, this is a serious problem to be addressed as it concerns the safety of human life. Existing bicycle safety system does not achieve the standards of cyclist safety measurements. This is because the existing implementations focus mainly on simple bicycle lightings for visibility.

The proposed bicycle safety system with sensor-based safety features focuses on the whole bicycle and also the cyclist. The safety features in the system will provide cyclist with active visibility lights, turning signal indicators and brake lights on the vest, and active warning lights to warn the vehicles about the presence of the cyclist to other road users. This solution will not only help in increasing visibility of the cyclist on the road, it will also assure the cyclist to be more visible and safer on public road. Ultimately, it is hoped that the proposed solution can reduce risk and accident for cyclist, and help to promote cycling as an alternative transportation mode for work and leisure.

The project was submitted to the UNIMAS Research and Innovation Expo, INTEX'16 and obtained a gold medal and subsequently was selected to participate at the Seoul International Invention Fair 2016 (1^{st} to 4^{th} Dec 2016, Seoul, Korea) and also obtained the Gold Medal award at SIIF2016.

Principle Investigator, Dr Johari Abdullah and project member, Kho Kai Li are testing the CycleSense solution, a sensor-based bicycle safety system.

Dr Johari Abdullah at SIIF2016

UNIMAS InTex'16 Gold Winner

The Effective Mobile-based Routing Method for Habitat Monitoring in MASNETs

UNIVERSITI MALAYSIA SARAWAK

INTRODUCTION

Mobile Ad-Hoc sensor networks (MASNETs) can be implemented in real environment as a very potential application like animal monitoring system. The attachment of sensors at any part of objects will enable communication amongst them within their own communication range in a specific area. The objects move randomly in a certain area with static source and base station.

As this process involve communication, energy consumption of the entire process were taken into consideration because the sensors only use battery to operate. We propose a distance estimation algorithm to improve the energy used, as the objects will select the nearest neighbour for data forwarding from source to base station.

SCENARIO

METHODOLOGY

START

Calibrate and mapping RSSI to distance

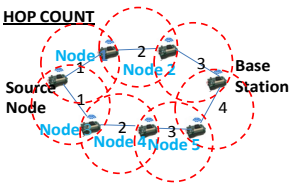
Designing Distance Estimation Algorithm

Implement and test new algorithm in simulation

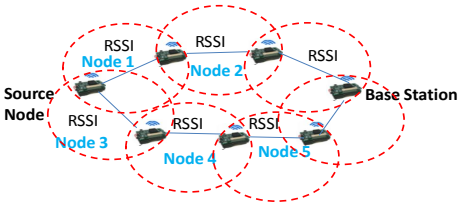
Testing and Verification Stage

END

HOP COUNT



DISTANCE ESTIMATION



Benchmark

AODV(Ad Hoc On-Demand Distance Vector) Routing Protocol (hop count)

Method

1)Received Signal Strength Indicator (RSSI)

2)Estimated distance

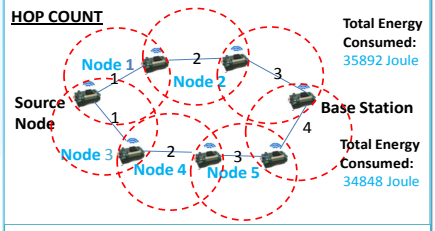
EARP

Outcome

Energy Savvy Routing Algorithm (Distance estimation)

HOP COUNT VS ESTIMATED DISTANCE

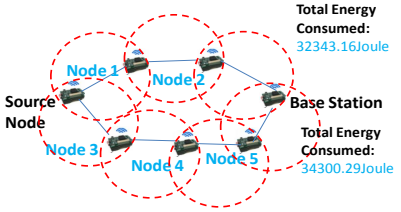
HOP COUNT



Total Energy Consumed: 35892 Joule

Total Energy Consumed: 34848 Joule

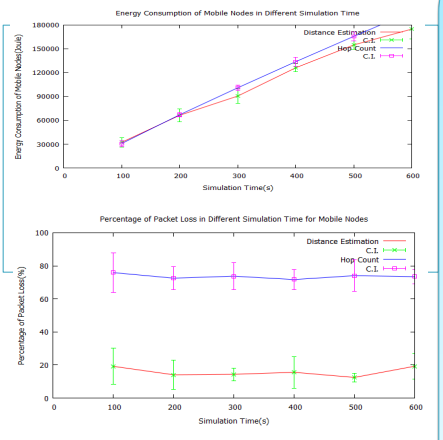
DISTANCE ESTIMATION



Total Energy Consumed: 32343.16Joule

Total Energy Consumed: 34300.29Joule

EXPERIMENTAL RESULT



CONCLUSION AND FUTURE WORKS

We believe the implementation of distance estimation for selecting the best next-hop node will improve the communication and indirectly reduce energy consumption.

In order to successfully implement AODV in a mobile environment there are several avenues for further studies as follows:

- To design an energy-savvy routing protocol based on direction estimation to conserve energy in mobile environment.
- To integrate cross-layer design for energy-efficient working of AODV. For instance, we study on different approaches to estimate the distance and direction of mobile nodes to get a better selection of the next-hop node in MASNETs.

RESEARCHERS:
DR. MOHAMAD NAZIM JAMBLI
WAN BALKIS WAN MOHD SHUHAIMI
SINARWATI MOHAMAD SUHAILI
DZULFIKAR RADZIMAN KAMAL

Faculty of Computer Science and Information Technology

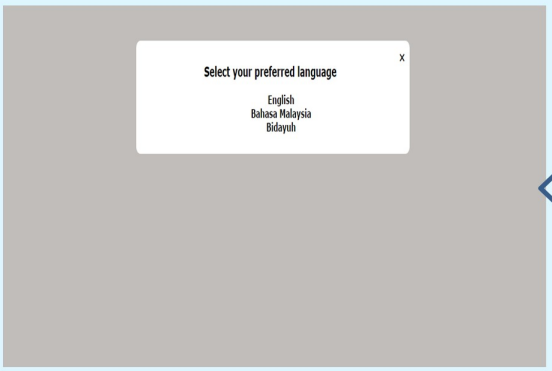
FoCuS IT focus on individual transformation

ACKNOWLEDGEMENT:
This work is supported by the Ministry of Education through Fundamental Grant Scheme (FRGS/ICT03(01)/1076/2013(22)).

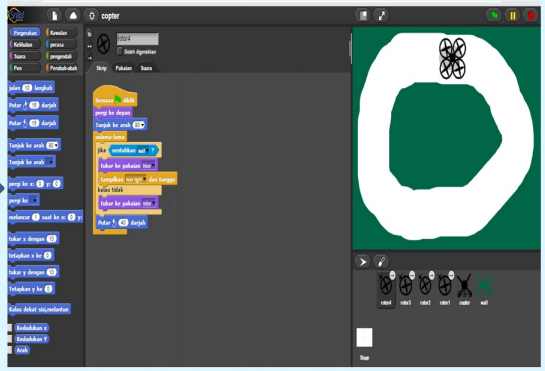
UNIMAS InTex'16 Gold Winner

Localization of E-learning Repository for Teaching Programming

BYOB! is an open source visual programming environment that can be translated into various languages. Localization is made to the target user in their own languages. The scope of this project is the locals from Singai, Bau in the state of Sarawak. This project uses Raspberry Pi as the server. The user will be given three different languages of tutorial which is English, Bahasa Malaysia and Bidayuh. The user will be tested using some programming task to evaluate which language can maximize his/her learning outcome.



ProgAp



Novelty and Innovativeness

To conduct research on which language can best maximize the programming learning outcome

Raspberry Pi to store the model and run it as a server.

Social Implication

Simplify teaching of programming to children in semi-rural area

Provide localized programming content to target group

Expose children to programming skills at a young age

Researchers:
Dr. Stephanie Chua
Kho Chung Ning

Acknowledgement : Faculty of Computer Science and Information Technology, Universiti Malaysia Sarawak

UNIMAS InTex'16 Gold Winner

Solar-Powered Adaptive Street Lighting with Energy-Neutral and Predictive Behaviour

Product Description

Street lighting is an important resource; it has been shown to reduce crime, improve road safety, and increase economic activity. These benefits, however, come with a cost: an annual emission of 64 million tonnes of CO_2. Solar-powered street lighting is attractive for its use of renewable energy and its ease of installation (particularly in off-grid applications).

Problems with solar-powered streetlights:
- limited energy storage; and
- variable energy budget due to weather conditions.

As a result, large solar panels and energy storage are required to provide a reliable source of light throughout the night. This leads to an oversized and thus overpriced system. Consequently, some had considered these streetlights to be not cost effective and visually intrusive.

Novelty

Whilst most lighting schemes have improved the energy-efficiency of 'grid- powered' streetlights, their application to 'off-grid' streetlights – powered locally by renewable energy – is restricted.

The novelty of TALiSMaN-Green (Figure 1), an enhancement of TALiSMaN, is use an **energy demand predictor** to maximise the use of limited energy budget by modulating the lighting levels requested by TALiSMaN.

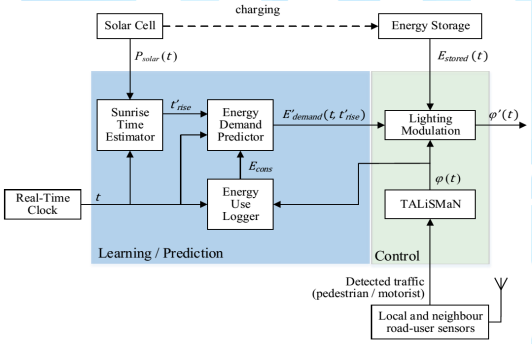


Figure 1: The TALiSMaN-Green control scheme.

TALiSMaN-Green has been evaluated using real traffic and solar data.
- The traffic data was obtained by videoing traffic along a road at the University of Southampton (Figure 2) for six weeks, then post-processing.
- The solar data was obtained from publicly-available data from Humboldt State University.

This provided inputs to StreetlightSim, simulating this traffic and energy scenario.

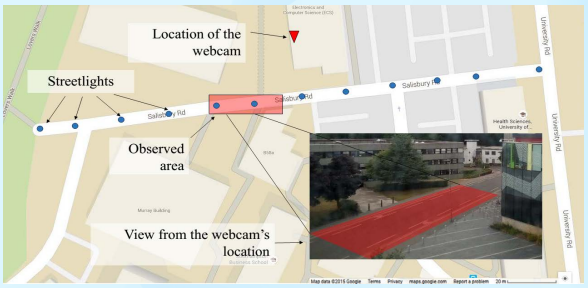
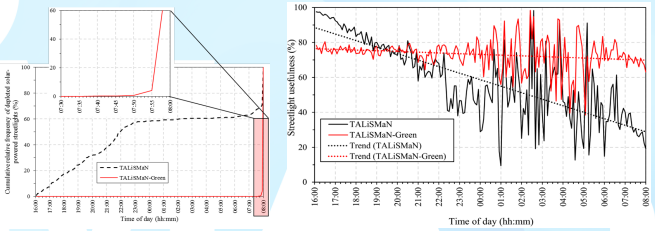


Figure 2: Data collection set-up and evaluation scenario.

Simulation results suggest that TALiSMaN-Green can prolong the operational lifetime of solar-powered streetlights 10 minutes before sunrise whilst maintaining streetlight usefulness at 60 – 80% throughout the entire night (Figure 3)



(a) (b)

Figure 3: (a) Proportion of solar-powered street lights which are not operational (because they have depleted batteries). (b) Mean streetlight usefulness experienced by users.

Commercial/Potential

TALiSMaN-Green:
- maintains the functions of street lighting even with limited energy budget.
- allows smaller solar-powered streetlight system to be used, thus making it more affordable for rural setting.

Researchers:

Sei Ping Lau*, Geoff V. Merrett‡ , Alex S. Weddell‡, Neil M. White‡

*Computer Systems and Communication Technology, FCSIT, UNIMAS

‡ Electronics and Computer Science, University of Southampton, U.K.

UNIMAS InTex'16 Gold Winner

ProColony: Automatic Colony Counting on-the-go

Introduction

ProColony is a mobile app designed for microbiologists to capture picture of Petri dishes and **automatically count the bacteria colonies.** This could ease the laborious and daunting manual counting task.

Need: Manual counting of colonies are usually

- *Lengthy*
- *Tedious*
- *Time-consuming*
- *Prone to human errors*

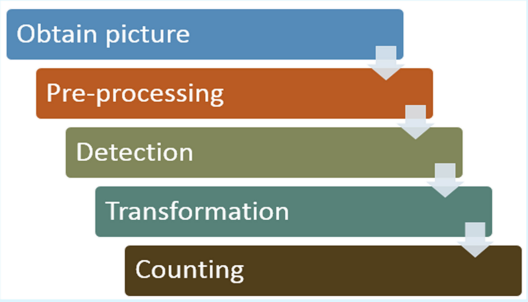
While existing technologies involves EXPENSIVE high-end imaging machines and instrumentations.

Result: An **EFFECTIVE** Automatic Bacteria Colony Counter on Mobile Platform employing highly **INTELLIGENT** computer vision algorithm.

Approach: Counting can be done in TWO EASY steps:

Step 1: Get the app on Android smartphones with decent camera capability

Step 2: Launch the app, take a picture of Petri Dish and voila! Automatic counting is done in seconds.

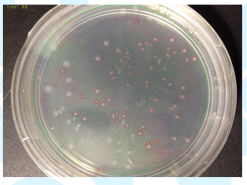


Model structure of ProColony

The Novelty of the Product

- Automatic count of bacteria colony on a Petri dish using mobile phones.
- Store picture and count data indefinitely.
- Can be linked to a computer.

Petri dish image acquisition



An example of the result of the detection and counting colony.

Researchers: Jacey-Lynn Minoi (jacey@fit.unimas.my), Tin Tze Chiang (FCSIT), Azham Zulharnain (FSTS)

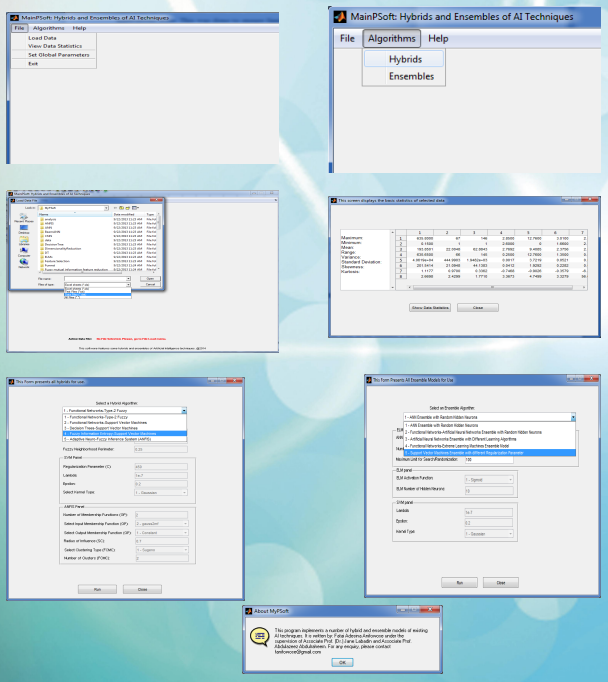
Under RAGS Project PI **Abdul Hafiz Abdul Karim (FK)**

Malaysia Technology Expo 2016, The Invention & Innovation Awards Silver Winner

HECIT: A HYBRID AND ENSEMBLE COMPUTATIONAL INTELLIGENCE TOOL FOR PREDICTIVE MODELLING

Product Description

- An integrated and unified platform for predictive modeling.
- Consists of 4 hybrid and 5 ensemble models.
- Models built with state-of-the-art machine-learning based algorithms.
- Models utilize the power of leaning based non-linear feature selection.



Novelty/Invention

- First ever study that utilizes LS-FN, DT and FIE algorithms for non-linear feature selection.
- First ever implementation of ensembles of hybrid models.
- Hybrid model attained R-Square of 0.96 prediction accuracy.
- Ensemble model attained R-Square of 0.99 prediction accuracy.
- < 5 seconds execution time for moderately-sized data.
- Qualifies for real-time implementation.

Commercial Potential

- For academic research.
- For academic training and practical demonstration of machine learning concepts.
- Can be applied to industrial problems.

Researchers:
Associate Professor Dr Jane Labadin
Dr Fatai Adesina Anifowose
Professor Dr Narayanan Kulathuramaiyer

Acknowledgement: Special thanks to UNIMAS and KFUPM for the resources used to carry out this research.

Silver and Bronze Winners

No.	Medal	Title	Principle Investigator	Members
1	Silver	InfoHealth	Stephanie Chua	Thaun Kai Yuan
2	Silver	Automated Heuristics-based Examination Scheduler	Sze San Nah	Chiew Kang Leng, Tiong Wei King, Noor Alamshah Bolhassan, Cheah Wai Shiang, Zuhaimy Ismail
3	Silver	Scalable Rekeying Secrecy Model for D2D Group Communication in 5G Cellular Networks	Rajan Thangaveloo	Adnan Shahid Khan, Johari Abdullah , Tn Hj. Ahmad Hadinata Fauzi
4	Silver	Weather Detection (Sunny or Rainy Day) Automated Garment Drying Rack	Adnan Shahid Khan	
5	Silver	Two Modified Frameworks of Bacterial Foraging Optimization Algorithm for Data Classification	Mohammad b Hossin	A.P. Dr Md Nasir Sulaiman (UPM), Dr Syafiq Fikri Lee Nung Kion, Mr Faizol Mohd Suria
6	Silver	Social Information Retrieval for Yahoo! Answers	Lee Jun Choi	AP Dr. Cheah Yu (USM)
7	Silver	Quantifying Critical Parameter in Disease Transmission	Jane Labadin	Kok Woon Chee
8	Silver	Interactive English Phonics Learning for kindergarten Consonant-VowelConsonant (CVC) Word Using Augmented Reality Technology	Jonathan Sidi	Lay Foong Yee and Prof. Dr. Wang Yin Chai
9	Silver	COMMAND: compass marching game on android	Syahrul Nizam Junaini	Safiah Nadiah Abdul Latiff
10	Silver	Merit System and GPS-based event attendance application	Syahrul Nizam Junaini	Abdul Rahim Mohamad
11	Silver	Ubiquitous Smart Low cost Networking for Rural Remote Telemetry	Tan Chong Eng	Kuruvilla Mathew
12	Bronze	Automated Student Examination Attendance System	Dayang NurFatimah Awang Iskandar	Choo Wei Wei, Ahmad Hadinata, Kartinah Zen
13	Bronze	Brainwave Controlled Wheelchair for Disabled Person	Johari Abdullah	Winny Kaduka
14	Bronze	CLOUDACC: cloud accounting app for sme	Syahrul Nizam Junaini	Mohammad Norhamizan Abu Bakar
15	Bronze	PREMATH: Preschool Mathematics Mobile Game	Syahrul Nizam Junaini	Tew Ai Dee

Silver and Bronze Winners

No.	Medal	Title	Principle Investigator	Members
16	Bronze	A Lightweight Data Hovering Algorithm for Information Discovery to Support Search and Rescue Operation in VASNETs	Sinarwati Mohamad Suhaili	Mohamad Nazim Jambli, Nor Ras Amierra Marzuki, Sia Chiu Shoon
17	Bronze	JOMJAWI: Learning Jawi Mobile Aplication for Kids	Syahrul Nizam Junaini	Asyraf Sulaiman
18	Bronze	Smart Weather Station for Home Area Network	Adnan Shahid Khan	
19	Bronze	SmartApps Toll Collection System (STCS)	Rajan Thangaveloo	Cheong Kah Chee
20	Bronze	Student Performance Analysis System (SPAS)	Dayang Hanani Abang Ibrahim	Emmy Dahliana, Dr Mohammad Hossin , Chew Li Sa
21	Bronze	Laptop Anti-theft Tracking System	Ahmad Hadinata bin Fauzi	Kiew Teck Sing, Rajan Thangaveloo and Dayang NurFatimah Awang Iskandar
22	Bronze	Android-based Hand-Foot-Mouth Disease (HFMD) Monitoring	Jane Labadin	Chang Yei Ling
23	Bronze	Online Communicable Disease Monitoring System	Jane Labadin	Wong Kok Siong
24	Bronze	FCSIT Face Recognition Mobile App	Hamimah Ujir	Tan Siuh Yin, Dr Irwandi Hipiny
25	Bronze	Automatic Detection of Oedema	Dayang NurFatimah Awang Iskandar	Amjad Khan, Wang Yin Chai, Hamimah Ujir
26	Bronze	Low Cost, Portable and Crowdsourcing based Air Quality Monitoring System	Johari Abdullah	Muhammad Hazim bin Mohd Ghazali
27	Bronze	Diabetic Detection through Activity Patterns using Home Area Network	Adnan Shahid Khan	
28	Bronze	Kid's Tracking System Using Wifi	Ahmad Hadinata bin Fauzi	Mohamad Hazree Hashim, Halikul Lenando and Dayang NurFatimah Awang Iskandar
29	Bronze	Final Year Project Title Allocation System	Emmy Dahliana Hossain	Jessica Chai Swin Joe

THE 2015 YEAR END EVENTS – FCSIT RESEARCH AND INNOVATION PARTICIPATIONS

Seoul International Invention Fair 2015

FCSIT won 2 bronze medals out of the 7 UNIMAS medals won in SIIF 2015

Among the seven research projects that represented UNIMAS in SIIF2015, FCSIT show cased two of its research projects.

The project entitled *"Predicting User Experience from Online Reviews"*, lead by Dr Bong Chih How analysed user online review to discover their experiences. The approach used was Natural Language Processing, prediction modules and review mapping. The benefits of this project is a solution to summarise reviews into user experiences. It could be used by online business analysis and feedback for any kind of services.

A mobile Apps that can categorise the Sarawak white pepper berries into all five grades using visual features, namely LadA: Mobile-based Pepper Berries Classification was also presented at SIIF2015. The Principle Investigator of this project is Dr Dayang NurFatimah Awang Iskandar. The Apps solved the current grading practice of white pepper berries which are done semi-automatically by human experts.

14th International Conference and Exposition on Inventions by Institutions of Higher Learning (PECIPTA 2015)

PECIPTA is a biannual event organised by Malaysia Ministry of Education with selected Malaysian university. The aim of this event is to showcase the creations and innovative products and service from the local and international institution of higher education.

FCSIT participated three research projects in PECIPTA 2015, all won Bronze Medal

Dr Bong Chih How's project entitled *"An Automatic Malaysia University English Test (MUET) Essay Grader"* show cased an automatic essay grading using Natural Language Processing and machine learning techniques. The benefits of his research is that students can obtain immediate feedback and it is cost effective. The potential targeted user is the Ministry of Education and Ministry of Higher Education Malaysia.

The *"Automated Pepper Berries Sorting Machine"* research project lead by Dr Dayang NurFatimah Awang Iskandar demonstrated the use of machine vision for grading and sorting Sarawak white pepper berries for remote locations. The machine is able to categorise the white pepper berries into all Sarawak white pepper five grades. It is portable, faster, cost efficient and affordable. The potential industries are Malaysian Pepper Board and its subsidiary companies, Ministry of Plantation Industries and Commodities, Ministry of Agriculture and Agro-based Industry, downstream pepper product industry player, importer and exporter of unprocessed dried pepper berries, and interested parties in other countries that also plant and export pepper such as India, Vietnam, Indonesia, Brazil and China.

Dr Chai Soo See participated PECIPTA 2015 with her research about urban flood-plain mapping using GIS and remote sensing approach for Kuching, Sarawak. This research links between hydraulic modelling, spatial display and analysis using ArcView GIS. It could visualise the flood plain for local areas in Malaysia and is cost effective approach.

FCSIT RESEARCH GRANTS

FCSIT Active Project in 2016

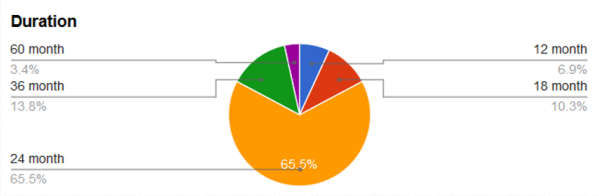
Fund Type	Top results
MOHE FRGS	12
UNIMAS-MYRA Special Short Term Grant (SpSTG)	7
UNIMAS SGS	6
UNIMAS SoTL	6
RACE	5
UNIMAS DPP	5
MOHE RAGS	3
MOHE ERGS	2
MOHE PRGS	2
The Cambridge Malaysian Education And Development Trust	2
UNIMAS Dana Kecil IPB	2
UNIMAS Special Funding For Research Institutes (SpFRI)	2
MOHE LRGS	1
MOHE NRGS	1
UNIMAS-MYRA Special Funding For Research Centres (SpFRC)	1
UNIMAS-MYRA Special Grant Scheme (SpGS)	1
Total	58

Total:

58

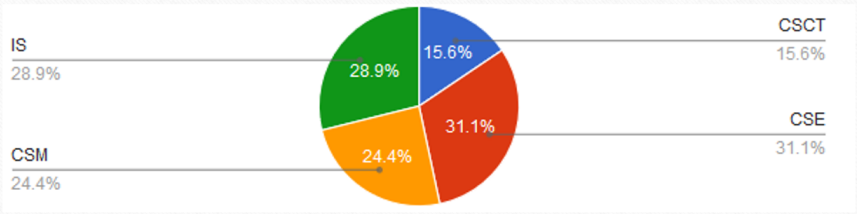
Amounting

RM 3,515,004.86



* All on-going projects from 2012 - 2016
* Active period of 12-60 months

FCSIT Principle Investigator 2016



Total Staff	70
Active Staff	66
Active PI	35
Non PI	31
% PI	53%
% Non PI	47%

Total:

35

FCSIT RESEARCH RECEIVED IN 2016

PI	Depart.	Members	Project Title	Duration (month)	Amount (RM)	Fund Type
Dr Hamimah Ujir	CSM	Prof Dr Iqbal bin Saripan (UPM), Dr Jacey-Lynn Minoi, Dr Dayang NurFatimah Awang Iskandar, Dr Irwandi Hipni Mohamad Hipiny	Comparative Analysis 3D Faces based on Expression Intensity Information of Malaysian Ethnics Data	36	46,900	RACE
Nurul Zawiyah Binti Mohamad	IS	Dayang Hanani Abang Ibrahim and Jennifer Fiona ak Wilfred Busu	Scaffolding Students' Application of Conceotual Understanding into Technical Design for Data Modelling Subjects at FCSIT	18	5,000	SoTL
Syahrul Nizam Junaini	CSE	Dr Johari Abdullah, Yanti Rosmunie Bujang, Ahmad Hadinata and Jonathan Sidi	From Phantom Instructor to Real Mentor: Reshaping Activities for Authentic Learner Engagement in MOOC Environment	18	6,600	SoTL
Dr Chai Soo See	CSE	None	Pair Programming in Introductory Programming - Looking Into The Pairing Issues	18	8,500	SoTL
Dr Bong Chih How	IS	Wendy Tan Wei Syn	Recognizing Textual Entailment by Identifying Directional Correlation in Vector Space Model	36	10,000	DPP
Fatihah Ramli	IS	Assoc. Prof Dr Balisoamanandray Ranaivo-Malancon and Dr Stephanie Chua Hui Li	Building on Ontology of Historical Newspaper Based on METHONTOLOGY and Natural Language Processing Techniques	24	20,000	SpSTG
Noor Hazlini Borhan	CSE	Dr Cheah Wai Shiang, Hamizan Sharbini and Rosita Mohamed Othman	Developing Reading Skills Using Sight Word Reading Strategy Using Interactive Mobile Game-Based Learning for Dyslexic Kids	24	20,000	SpSTG
Rosita Mohamed Othman	IS	Assoc. Prof Dr Balisoamanandray Ranaivo-Malancon, Suhaila Saee and Yanti Rosmunie Bujang	Recommendation on ICT Application Design for Sarawak Minority Community using Requirement Ellicitation	24	20,000	SpSTG
Rajan Thangaveloo	CSCT	Dr Adnan Shahid Khan, Dr Johari Abdullah and Ahmad Hadinata Fauzi	Scalable Rekeying Secrecy Model for D2D Group Communication in 5G Cellular Networks	24	20,000	SpSTG
Ahmad Hadinata Fauzi	CSCT	Dr Adnan Shahid Khan and Rajan Thangaveloo	Mitigating MAC Layer Attacks in 5G Cellular Networks	24	20,000	SpSTG

PI	Depart.	Members	Project Title	Duration (month)	Amount (RM)	Fund Type
Abdul Rahman Mat	CSE	Dr Mohammad Hossin and Norfadzlan Yusup	The Modified Prototype-Based Genetic Algorithm Classifier for Large Datasets	24	20,000	SpSTG
Inson Din	IS	Assoc. Prof Dr Noor Alamshah Bolshassan, Dr Nadianatra Musa, Dayang Hanani Abang Ibrahim and Yanti Rosmunie Bujang	Performance Measurement Based IT Audit Framework for Higher Learning Institutions using IT Governance Techniques	24	20,000	SpSTG
Dr Johari Abdullah	CSCT	Dr Adnan Shahid Khan, Dr Mohamad Nazim Jambli and Dr Halikul Lenando	A Dynamic and Automated Signature Detection Framework for Malware Analysis	24	20,000	SpFRC
Dr Sarah Flora Anak Samson Juan	CSM	Jennifer Fiona Wilfred Busu	Corpus Building for a Multilingual Automatic Speech Recognition System	24	25,000	SpFRI
Prof. Madya Dr Balisoamanandray Ranaivo-Malancon	IS	Suhaila Saee, Rosita Mohamed Othman and Jennifer Fiona Wilfred Busu	Building Machine Readable Dictionaries by Unifying the Structures of Indigenous Language Dictionaries using Formal Grammars and XML	24	26,000	SpFRI
Dr Adnan Shahid Khan	CSCT	Dr Kartinah Zen, Dr Johari Abdullah and Rajan Thangaveloo	Secure and Dynamic Multiple Junction Selection Routing Protocol in VANET	24	20,000	SpGS
Dr Halikul Lenando	CSCT	Dr Adnan Shahid Khan and Abdalla Hasan Gharib	Social-Based Heterogeneous Information Dissemination through P2P Interactions in Opportunistic Network	24	8,400	DPP
Ahmad Hadinata Fauzi	CSCT	Dr Dayang NurFatimah Awg Iskandar	Sarawak Traditional Food Locator using Mobile Apps	12	10,000	UNIMAS Dana Kecil IPB
Dr Cheah Wai Shiang	CSE	Noor Hazlini Borhan, Aida Shafreena Ahmad Puad (FSTS) and Puah Ching Hong (UBS)	Mobile Flora Information System for Visitor in Kuching Division	12	9,000	UNIMAS Dana Kecil IPB
Dr Nadianatra Musa	IS	Dr Dayang Hanani Abang Ibrahim, Rosita Mohamed Othman, Dr Dayang NurFatimah Awang Iskandar and Shahrin bin Hashim (UTM)	Service Learning Guidelines and Checklist for Computer Science Technopreneur and Product Development and Product Development	18	10,300	SoTL

PI	Depart.	Members	Project Title	Duration (month)	Amount (RM)	Fund Type
Nurfauza Jali	CSE	Dr Azman Bujang Masli, Dr Cheah Wai Shiang, Abdul Rahman Mat, Yanti Rosmunie Bujang and Norazian Mohamad Hamdan	Software Development in Software Engineering Course - Looking into Project Planning and Estimation Using Team Software Process (TSPi) and Scrum	18	10,000	SoTL
Dr Stephanie Chua Hui Li	IS	Prof Dr Narayanan Kulathuramaiyer, Prof Madya Dr Balisomanandray Ranaivo-Malancon and Siaw Nyuk Hiong (IPG)	A Plot-Based Knowledge Extraction Method for Story-Based Document Summarization	36	10,000	SoTL
Dr Tariq Zaman	IS	Prof Dr Narayanan Kulathuramaiyer and Rosita Othman	Development of an Offline Interactive Learning Tool in Borneo Malaysia, CAT's and Elimsis	12	29,733	Cambridge Malaysian Education and Dev. Trust
Dr Tariq Zaman	IS	Dr Johari Abdullah	Development of A Technology Package to Deploy Offline Application CAT's in Rural Communities	12	49,147	Cambridge Malaysian Education and Dev. Trust

FCSIT RESEARCH COMPLETED IN 2016

Principle Investigator	PI Department	Members	Project Title	Year Received	Year Ending	Duration	Amount (RM)	Fund Type
Dr Dayang NurFatimah Awg Iskandar	CSE	Prof. Dr. Wang Yin Chai, Prof. Dr. Mohd Zamrin Bin Dimon, Dr Hamimah Ujir	Spatio-Temporal Semantic Representation of Cardiac MRI	2013	5/31/2016	36 month	83130	MOHE ERGS
Dr Hamimah Ujir	CSM	Dr. Dayang Nurfatimah Awg Iskandar, Dr. Micheal Spann, En. Irwandi Hipni Bin Mohamad Hipiny, En. Muhamad Najib Bin Zamri	3D Facial Features Tracking for 4D Facial Expression Intensity Estimation	2013	5/31/2016	36 month	80750	MOHE ERGS
Dr Stephanie Chua Hui Li	IS	Prof Madya Dr Balisoamanandray Ranaivo-Malancon & Emmy Dahliana Hossain	Applying Text Mining Techniques to Sarawak Gazette	2013	1/7/2016	24 month	9100	UNIMAS SGS
Dr Tiong Wei King	CSM	Dr Chiew Kang Leng, Dr Sze San Nah, Ong Chee Tiong & Tay Kim Gaik	The Effect of Damping on the Evolution of Large-amplitude Undular Bores	2013	2/26/2016	24 month	41200	MOHE RAGS
Dr Wang Hui Hui	CSE	Prof Dr Wang Yin Chai, Dr Chai Soo See & Lim Phei Chin	Semantic Query Approach for Image Retrieval in Traffic Images	2013	2/28/2016	24 month	36200	MOHE RAGS
Dr Stephanie Chua Hui Li	IS	Dr Bong Chih How & Puteri Nor Ellyza Binti Nohuddin	A Pattern Discovery Model for Text Mining	2013	2/26/2016	24 month	42200	MOHE RAGS
Dr Chiew Kang Leng	CSM	Dr Tiong Wei King, Dr Sze San Nah & Ling Yeong Tyng	Enhancing the Phishing Website Detection Model Through Uniform Resources Locator Analysis	2013	5/31/2016	24 month	67200	MOHE FRGS

Principle Investigator	PI Department	Members	Project Title	Year Received	Year Ending	Duration	Amount (RM)	Fund Type
Prof Madya Dr Jane Labadin/ Ling Yeong Tyng	CSM	Ling Yeong Tyng/Prof Madya Dr Jane Labadin & Dr Shapiee Abd Rahman	Quantifying Fear Factor to be used in Disease Modeling	2014	10/9/2016	24 month	25000	UNIMAS SGS
Dr Bong Chih How	IS	Dr Syafiq Lee Nung Kiong & Mohamad Hardyman Bin Barawi	Towards Computational Methods for Meta-Analysis: Automatic Detection of Synonymous in Variables	2015	5/31/2016	24 month	63500	MOHE FRGS
Prof Dr Narayanan Kulathuramaiyer	CSE	Prof Madya Dr Alvin Yeo Wee, Prof Madya Dr Tan Chong Eng, Dr Chiew Kang Leng, Dr Cheah Wai Shiang, Prof Madya Dr Lo May Chiun, Abang Azlan Mohamad, Izzatul Nabila Bt Sarbini	Modelling & Management of Responsible Rural Tourism Framework	2012	11/17/2016	60 month	579520	MOHE LRGS
Assoc. Prof Dr Jane Labadin	CSM	Phang Phiau	Generic Transmission Model for Mosquito-Borne Diseases	2013	5/31/2016	24 month	97300	MOHE FRGS
Dr Azman Bin Bujang Masli	CSE	Dr Edwin Mit	System's Property Preservation Under Refinement in Integrated Formal Specifications	2013	5/31/2016	24 month	70000	MOHE FRGS
Dayang Hanani Binti Abang Ibrahim	IS	Johari Abdullah, Prof Madya Dr Jane Labadin, Dr Nadianatra Musa & Dr Chiew Kang Leng	An Enhancement of Provenance Model Incorporating Service Versioning	2013	8/30/2016	24 month	71500	MOHE FRGS
Mohamad Nazim Bin Jambli	CSCT	Johari Abdullah, Dr Halikul Lenando, Dr Kartinah Zen, Sinarwati binti Mohamad Suhaili	A Dynamic Energy-savvy Routing Algorithm for Mobile Ad-hoc and Sensor Networks	2013	5/31/2016	24 month	57000	MOHE FRGS
Terrin Lim	CSM	Prof Madya Dr Cheah Yu-N (USM), Prof Madya Dr Alvin Yeo Wee & Prof Madya Dr Balisoamanandray Ranaivo-Malançon	Exploring a Network-based Visual Representation of Printed Historical Data	2014	7/20/2016	24 month	39800	RACE
Dr Bong Chih How	IS	Prof Madya Dr Norisma Idris (UM) & Dr Stephanie Chua	A Generative Probabilistic Linguistic Algorithm to Support Open-Domain Question and Answering	2014	7/20/2016	24 month	50000	RACE

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Journals

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6. Abbasi A.A. and Kulathuramaiyer N. (2016). A systematic mapping study of database resources to ontology via reverse engineering, Asian Journal of Information Technology, 15(4), pp. 730-737.
7. Waishiang C., Yeewai S., Nizam S. and Cheewyai L. (2016). Agent oriented requirement engineering for lake mathematical modelling: Preliminary study, Journal of Telecommunication, Electronic and Computer Engineering, 8(2), pp. 5-10.
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11. Larsen K.R. and Bong C.H. (2016). A tool for addressing construct identity in literature reviews and meta-analyses, MIS Quarterly: Management Information Systems, 40(3), pp. 529-551.
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13. Hui-Hui Wang, Yin-Chai Wang, Soo-See Chai. (2016). Towards Semantic User Query: A Review, Journal of Computer Science, 11(10), pp. 1017-1024.
14. Kiakojuri, Davood; Shamshirband, Shahaboddin; Anuar, Nor Badrul; Abdullah, Johari. (2015). Analysis of the social capital indicators by using DEMATEL approach: the case of Islamic Azad University, Quality & Quantity, 49(5), pp. 1985-1995.
15. Franco, F. Merlin; Hidayati, Syafitri; Ghani, Bibi Aminah Abdul; Ranaivo-Malançon, Bali. (2015). Ethnotaxonomic systems can reflect the vitality status of indigenous languages and traditional knowledge, Indian Journal of Traditional Knowledge, 14 (2), pp. 175-182.
16. Santhi, Kalimuthu; Prepageran, Narayanan; Tang, Ing Ping; Raman, Rajagopalan. (2015). Study of Epithelial Migration in the Tympanic Membrane and Bony External Auditory Canal Wall in Patients With Irradiated Nasopharyngeal Carcinoma, Otology & Neurology, 36(2), pp. 318-322.

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32. Anifowose, F.A., Labadin, J., Abdulraheem, A. (2015). Ensemble model of non-linear feature selection-based Extreme Learning Machine for improved natural gas reservoir characterization, Journal of Natural Gas Science and Engineering, 26, pp. 1561-1572.

Conference Proceedings

1. Amjad Khan, D.N.F Awang Iskandar, Hamimah Ujir and Wang Yin Chai.(2017). Automatic Segmentation of CMRIs for LV Contour Detection, in Proceedings of the 9th International Conference on Robotics, Vision, Signal Processing & Power Applications (RoVISP 2016), pp. 313-319, doi: 10.1007/978-981-10-1721-6_34.

2. Choon Lin Tan, Kang Leng Chiew and San Nah Sze.(2017). Phishing Webpage Detection Using Weighted URL Tokens for Identity Keywords Retrieval, in Proceedings of the 9th International Conference on Robotics, Vision, Signal Processing & Power Applications (RoVISP 2016), pp. 133-139, doi: 10.1007/978-981-10-1721-6_15.

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Department of Information System

"Togetherness: Making it work" for initiating, improving research and publications in IS Department

IS Academic Members

1. Dr Dayang Hanani bt Abang Ibrahim, Head of Department
   Knowledge Management Analytics & IS in Organisations and Community
2. Jennifer Fiona anak Wilfred Busu, Program Coordinator
   Educational Learning Technology & Requirements Elicitation
3. Assoc. Prof. Dr Balisoamanandray Ranaivo-Malançon
   Natural Language Processing/Text Data Mining
4. Dr Bong Chih How
   Natural Language Processing & Computational Semantics
5. Dr Nadianatra binti Musa
   IT/IS Security Governance & IS in Organisations and Community
6. Dr Stephanie Chua Hui Li
   Data, Text and Image Mining, Machine Learning
7. Dr Mohammad bin Hossin
   Data Mining Optimisation & Educational Learning Technology
8. Dr Tariq Zaman
   Indigenous Knowledge Management & Community-based Co-Design
9. Mohamad Nazri bin Khairuddin Yap
   Knowledge Management & Information Trustworthiness
10. Rosita binti Mohamed Othman
    Educational Learning Technology & Knowledge Management
11. Inson Binti Din
    IT Audit & Community Based Research
12. Lee Jun Choi
    Text Processing & Intelligent System
13. Chiu Po Chan
    Artificial Intelligence & Human Computer Interaction
14. Nurul Zawiyah bt. Mohamad
    Educational Learning Technology & Ontology Engineering
15. Suhaila Binti Saee
    Computational Linguistics & Natural Language Processing
16. Emmy Dahliana Binti Hossain
    Natural Language Processing & Big Data
17. Fatihah binti Ramli
    Semantic Technology & Information Retrieval

IS Research Highlights

IS Research Workshop and Development Needs for Publications and Grants- Part I

IS Department had organised a two days workshop on the 1-2 February 2016, at Staff Lounge, University House, UNIMAS. This workshop aimed to introduce the development, strategies and tips of writing research papers, preparing grant proposals and initiating collaborations. The topics of discussions are (i) How to structure a good paper; (ii) to develop strategies towards groups for writing based on collaborative interests; (iii) to develop strategies in achieving high productivity research outputs in terms of publications and grants.

In this workshop, the IS members were exposed to the useful ways to start writing papers, grants and work together in groups. Sharing sessions with IS mentors Prof Dr. Alvin Yeo, A.P. Dr. Balisoamanandray Ranaivo-Malançon, Dr. Bong Chih How, and invited mentors: Prof Dr. Narayanan Kulathuramaiyer and Dr. Tariq Zaman on tips and experiences on preparation and process towards publications were organised. The sharing sessions include topics on Strategising the publications vis-a-vis your career path, Put into Action: Research Grant Application, Research in Publication, Teaching and Learning.

Outcome: From the workshop, IS Department has come up with 14 lists of titles for Research Grants. Seven has been submitted to Special Grant Schemes on the 10th February 2016 that represents 50% from the total 14 grants. For this year nine new grants has been successful accepted under IS Department.

IS Research Workshop and Development Needs for Publications and Grants-Part II

As a follow-up to our previous workshop in February 2016, IS Department has organised the second series on the 5th August 2016 at Staff Lounge, University House, UNIMAS.

This workshop was organized to assist IS Department members on approaches and tips of writing research papers and grant proposals and develop strategies towards a potential publication and grant application.

In the workshop series, the members were exposed to the useful ways of writing research papers and grant proposals and to work in groups to achieve the desired aim. During the workshop, the IS Mentors played tremendous role in assisting the activities.

Outcome: From the workshop, IS Department has come up with 5 lists of titles for Research Paper and 3 titles of Research Grant to be submitted in 2016.

Tableau Workshop: Telling stories from your data

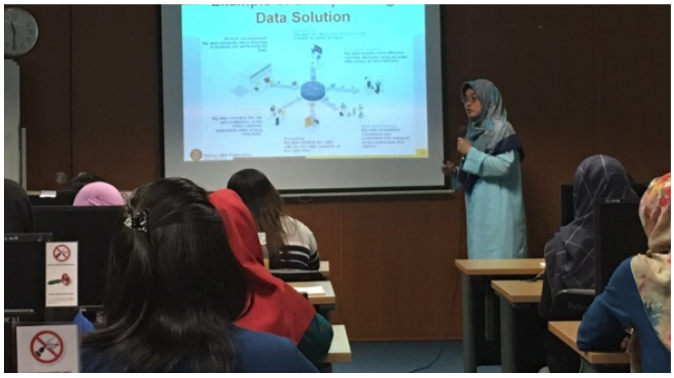
Tableau workshop was organised on the 14th September 2016 at FCSIT Big Data Lab. It was a hands-on training on using Tableau software to visualize data.

IS Research Opportunities with Final Year Students

The IS Programme has conducted a meeting with the Final Year Students 23rd June 2016. The objective was to engage and inform the final year students prospects of pursuing postgraduate studies after graduation as well as other issues relating to their study.

IS Research Highlights

Knowledge Sharing with IS Programme Academic and Industrial Advisory Panel Advisors



IS Programme Academic Panel Advisor, Prof Dr Naomie bte Salim, Head of Soft Computing Research Group and a Professor from UTM had visited UNIMAS from 28-30 March 2016.

During her visit, she had sharing session on emerging role of big data and research opportunities in the field. She also advised and shared to all the researchers and FCSIT staff on effective ways of Mentoring for Graduate on Time (GOT).

IS Programme Industrial Panel Advisor, Mr. Mohammed Shaharuddin Mohammed Izzuddin, Executive Vice President UMW Technology Sdn. Bhd. had visited UNIMAS from 7-8 November 2016.

During his visit, he has shared research opportunities and advised on IS courses and research activities that are currently in demand by the industry. Mr Shaharuddin also intensively conducted a fruitful discussion on Project Management opportunities both for training and research.

Department of Computing and Software Engineering

CSE Academic Members

1. Dr Azman Bin Bujang Masli, Head of Department
   Formal Methods, Software Verification, SE for IoT & Temporal logic
2. Dr Irwandi Hipni Bin Mohamad Hipiny, Program Coordinator (Multimedia Computing)
   Image Processing, CBIR & Computer Vision
3. Norazian Binti Mohamad Hamdan, Program Coordinator (Software Engineering)
   Methodologies & Component Based Software Engineering
4. Prof. Dr Narayanan A/L N. Kulathuramaiyer
   Artificial Intelligence & Knowledge Management
5. Prof. Dr Wang Yin Chai
   Spatial Data Analysis & Image Processing
6. Assoc. Prof. Dr Edwin ak Mit
   Formal Methods & OO Modeling
7. Assoc. Prof. Dr Noor Alamshah B. Bolhassan
   Web Development, Mobile Computing & Virtual Environment
8. Dr Dayang Nurfatimah bt Awg Iskandar
   Image Processing and recognition, CBIR & Semantic Technologies
9. Dr Cheah Wai Shiang
   Mobile Agent Knowledge Engineering, Ontology Engineering & Software Process
10. Dr Wang Hui Hui
    Image Processing & CBIR
11. Dr Chai Soo See
    Image Processing GIS Artificial Intelligence & Remote Sensing
12. Dr Jacey Lynn Minoi
    Image Processing and Recognition, Facial Recognition & Statistical Discriminant Methods
13. Jonathan anak Sidi
    HCI & User Experience Design
14. Syahrul Nizam bin Junaini
    Web Usability, HCI & Mobile Computing
15. Suriati Khartini Binti Jali
    Image Processing, Web Design, Game Design & Development
16. Amelia Jati Anak Robert Jupit
    Usability Design & Game-Based Learning
17. Hamizan binti Sharbini
    Web Usability & Crowd Modelling Simulation
18. Noor Hazlini Bt Borhan
    Interactive Multimedia, Software Engineering & Information Management
19. Nurfauza bt Jali
    Language Technology, OO Modeling, Knowledge & Ontology Engineering
20. Abdul Rahman bin Mat
    Formal Methods, Knowledge Engineering Software Process & Engineering
21. Eaqerzilla Phang
    OO Modeling & Artificial Intelligence
22. Wee Bui Lin
    Software Measurement
23. Yanti Rosmunie Binti Bujang
    Usability Testing & OO Quality
24. Norfadzlan bin Yusup
    Artificial Intelligence
25. Mohamad Johan bin Ahmad Khiri
    Software Engineering & Verification
26. Muhammad Asyraf bin Khairuddin
    Software Requirements & Engineering
27. Tan Ping Ping
    Statistical Machine Translation & Assistive Technology

CSE Research Highlights

Agent-Oriented Modelling (AOM): a Methodology for Designing Sociotechnical Systems

Prof. Kuldar Taveter, Head of the Sociotechnical Systems' Lab, Department of Informatics, Tallinn University of Technology, Estonia

The research seminar was conducted on 11th May 2016. It provided an overview of the Agent-Oriented Modelling (AOM) software engineering methodology for designing sociotechnical systems. The AOM methodology is centred on the notion of "agent" or "actor". It views sociotechnical systems as consisting of human agents and man-made agents, such as software agents and smart devices. AOM offers software engineering processes and work products for agile design, simulation, and prototyping of distributed sociotechnical systems as multi-agent systems. In the centre of AOM lies the viewpoint framework within which to design multi-agent systems. The viewpoint framework supports the modelling of a given problem domain from three balanced and interrelated viewpoint aspects: information, interaction, and behaviour. The behaviour aspect is concerned with the behaviours and intelligence of individual agents. The interaction aspect addresses what the system can achieve through interactions between many agents. Finally, the information aspect deals with shared and private items of knowledge by the agents. The AOM methodology is supported by the web-based AOM4STS tool. The presenter will use as a running case study an industry project of designing and prototyping an aircraft turnaround simulation system.

CSE Research Meeting

The meeting was held on the 9th November 2016, BMU, FCSIT to discuss the following:

- Publication
- Research grant application
- Research seminars
- Strategies to increase research activities in the department
- Problems faced by the staff in research and publications
- The MYRA requirements that each staff need to be aware of.
- KPI for everyone and how to help each other in achieving the KPI

Refinement in Integrated Formal Specification

by Dr Azman Bujang Masli, Norazian Mohd Hamdan, Nurfauza Jali and Yanti Rosmunie Bujang

The complexity of software systems is increasing and, consequently, making it more difficult and necessary to determine whether or not they work correctly. In the context of the currently applied software development techniques, system testing is commonly used for validating software, but testing alone cannot ensure that the software is in accordance with important behavioral properties, such as robustness or safety requirements.

Developing software systems for rural communities faces additional challenges in ensuring the successfulness of the implementation. This is with regards to the level of acceptance of the rural community to use the systems in improving their quality of life. Although there are many factors affecting the ICT adoption in rural areas, showing that the software system meets the community needs may improve the level of acceptance.

Particularly, the research focuses on formal verification of software system in identifying whether the software satisfies its requirements and specifications. Through formal modeling and verification methods, it is possible to determine if the system works correctly while considering all possible behaviors.

CSE Research Highlights

FOTool

by AP Dr Edwin Mit

Figure 1: FOTool Architecture

The idea of this research (FOTool) is to integrate different software models (NL, OO, FM) via standard internal representation (XML) as shown in Figure 1.

To enable the communication between these three different models it is necessary to understand the syntax and semantics of formal model(FM), natural language(NL) and object-oriented (OO) modelling language. FOTool is on-going research project which consists of several research components.

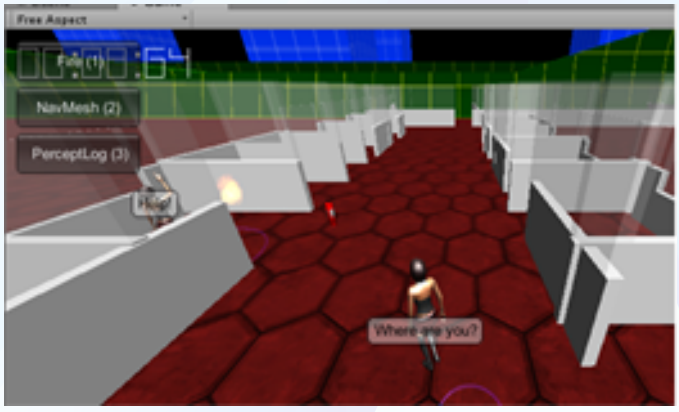
The initial research idea was to Develop the VDM Operation from UML models (Researchers: Edwin Mit (UNIMAS), Farid Meziane (Salford, UK), funded by SLAB, 2000-2006). However, the main challenge to derive UML models from natural languages (NL) is the well-known NL limitations such as ambiguity, incomplete and its imprecise definition. Therefore in TRIBE project (Researchers: Edwin Mit, Alvin Yeo Wee, Suhaila Saee, Ting Sui Hie, Sarah Flora, Lee Jun Choi, Jennifer Wilfred, Suriati Khartini, Nurfauza Jali, Beatrice Chin, Tang Enya Kong (USM), funded by eSCience, 2007-2009), the Methodologies for Translation into Minority Languages: English-Iban, work on semantics of the text based on Synchronous Structured String Tree Correspondence (SSTC) approach. Another related work on requirement semantics was *An Enhancement on Current Approach in Word Sense Disambiguation (WSD)*,(Edwin Mit & Lee Wei Jan, 2009-2012).

FOTool had been deployed in several projects: Integration of Cultural and Event in Indigenous Community Genealogy Software (Researchers: Edwin Mit, Noor Hazlini Bt Borhan, Muhammad Asyraf Bin Khairuddin, funded by SGS, 2011-2012). However, there are still number of improvement need to be done on FOTool. Latest work on FOTool is to integrate the uncertainty in the models. This has been carried out in project: Formal Fuzzy-Based Approach to Model the Abstract Values of Beliefs to the Consequences (Researchers: Edwin Mit, Azman Bujang Masli, Cheah Wai Shiang, Abdul Rahman Mat and Jonathan Sidi, Ng Boon Ding (MSc/RA),funded by FRGS, 2012-2014). The current on-going project on FOTool is the Formal Platform for Assessing Quality of Heterogeneous Software Requirement (Researchers: Edwin Mit, Cheah Wai Shiang, Noor Hazlini, Wee Bui Lin, Jonathan Sidi, Elly Stephen (MScRA, funded by FRGS). This project is currently defining the formal platform based on FOTool approach in order to measure the quality of software requirement in terms of correctness, completeness and consistency.

Multi-Agent Cognitive Architecture for Virtual Characters In 3D Virtual Worlds

by Dr Cheah Wai Shiang, Prof. John Juley Meyer and Prof. Kuldar Taveter

One of the challenges for serious games development is to develop believable, autonomous cognitive agents. Although machine language techniques are introduced to mimic autonomous cognitive characters in serious games, it is computationally expensive and costly. Alternatively, cognitive architecture like BDI is introduced to model cognitive agents in serious games. The BDI architecture is able to model the cognitive agents of a game character, however, it is suffer from unable to handle multi-tasking and balancing between reactive and proactive behaviour. In this work, the authors introduce a multi-BDI cognitive architecture for cognitive agents. Furthermore, a systematic processes to model the details of multi-BDI cognitive architecture is introduced. The AOM is adopted and extended to model and implement a multi-BDI cognitive architecture for cognitive agents. We demonstrate how the extended AOM is used to model a BDI cognitive agents and transformed into cognitive implementation through an OOAPL, an object oriented BDI agent programming language. With AOM, we can track and trace the cognitive processing. Also, we can transfer and modify the agent models in different scenarios or case studies.

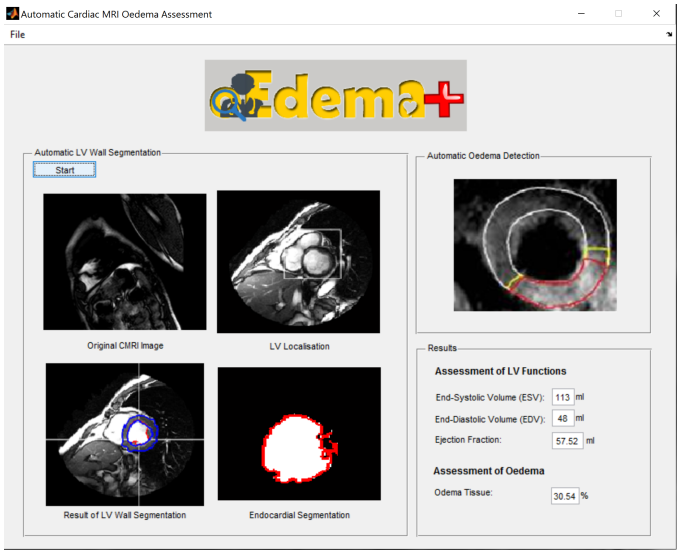


Screenshot of social interaction during fire situation

CSE Research Highlights

Automatic Oedema Segmentation and Identification from Cardiac Magnetic Resonance Images

by Dr D.N.F Awang Iskandar, Amjad Khan, Dr Hamimah Ujir, Prof Wang Yin Chai, AP Dr Asri Said and Dr Nor Hanim Mohd Amin



Coronary Artery Disease still is the main cause of death worldwide even though with recent improvements in therapeutic and intervention methods. On shelf commercial software used by the cardiac experts are semi automatic. thus, a patient assessment is time consuming and labour intensive.

Through in-depth research, we reached a solution for automatic oedema detection and assessment using CMRIs. Thus, this work contributes to the social impact and has a very high potential for commercialisation. The novelty and technological innovations: 1) first fully automatic cardiac MRI oedema assessment; 2) reduce assessment time and effort; and 3) robust algorithm in automatic LV detection and oedema assessment using CMRI.

The commercial value of diagnostic and medical imaging market is worth USD 33.42 Billion by 2020, Asia-Pacific market is expected to grow at the highest compound annual growth rate (CAGR) of 7.2% from 2015 to 2020.

Potential industries are the global market players in the domain: GE Healthcare (General Electric Company, U.K.), Siemens Healthcare GmBH (Siemens AG, Germany), Koninklijke Philips N.V. (The Netherlands), Toshiba Medical Systems Corporation (Toshiba Corporation, Japan), Hitachi Medical Corporation (Hitachi Ltd., Japan), Carestream Health, Inc. (U.S.), Esaote S.p.A (Italy), Hologic, Inc. (U.S.), Fujifilm Corporation (Japan), Samsung Medison (South Korea), and Shimadzu Corporation (Japan).

3D Faces Data Collection for Malaysian Ethnicity

by Dr Hamimah Ujir , Prof Dr Iqbal Saripan, Dr Jacey-Lynn Minoi, Dr Irwandi Hipni bin Mohamad Hipiny and Dr Dayang Nurfatimah binti Awang Iskandar

This research is motivated by the need to have an accurate 3D facial expression intensity analysis using a planned 3D face database (i.e., MUA3D) consisting of various Malaysia's ethnic groups. In the Iban language, the word Mua can be translated as face. We plan to build the MUA3D database by collecting 3D faces of various ethnic groups in Malaysia, namely Chinese, Indian, Iban and Malay. We believe that a uniform distribution of these ethnic groups inside the database is a must to ensure adequate representation (of each ethnic group) inside the training data. This criterion is presently not met in any existing 3D face databases. Using the MUA3D database, we plan to carry out several experiments, namely, 3D face recognition, 3D facial expression classification and ethnicity recognition. A comparative study between MUA3D and existing comparable databases will also be conducted. Data collection activity will start in January 2017. As such, we are actively looking for willing participants; please contact Dr Hamimah Ujir at uhamimah@unimas.my for details. This research is supported by the Ministry of Education Malaysia through the following research grant: $RACE/F3/TK5/UNIMAS/17$.

Passive Biometric Identification of Sea Turtles (Chelonia Mydas)

by Dr Irwandi Hipni bin Mohamad Hipiny, Dr Hamimah Ujir and Dr Aazani Mujahid

Identification of individual sea turtles within a population is essential for behavioral and ecological study, allowing estimation of vital statistics such as growth rate, survivorship, foraging patterns and population size. Physical tagging may be harmful to the animals, as such, we are developing a remote image-based approach to identify individuals based on discriminating pattern found on their carapace. For that purpose, we have collected night images of captive sea turtles (placed on a sand surface), taken from an elevated/direct-down position using motion-activated cameras. The setup was designed to mimic a sea turtle nesting site. The dataset was collected at a sea turtles sanctuary located at Pandan Beach, Lundu, Sarawak. The development of a template-based descriptor is on-going. This research is supported by the following research grant: $SGS/F08(S160)/1171/2014(25)$.

Department of Computer Systems & Communication Technologies

CSCT Academic Members

1. Dr Halikul bin Lenando, Head of Department
   Mobile P2P Network Communications & Social Network
2. Seleviawati bt Tarmizi, Program Coordinator
   Mobile Ad-Hoc Networks & Trust Management
3. Assoc. Prof. Dr Tan Chong Eng
   Wireless Communication, Broadband Access networ & Green ICT architecture.
4. Dr Johari bin Abdullah
   Trusted System, Uncertainty Tolerance, Malware & Penetration test
5. Dr Kartinah Bt Zen
   Wireless Sensor Network & Mobile Sensor Network
6. Dr Adnan Shahid Khan
   Network Security, Cognitive Radio Networks & Wireless Sensor Networks
7. Dr Lau Sei Ping
   Wireless Sensor Network & Power Optimization
8. Dr Mohamad Imran bin Bandan
   Reliability & Fault Tolerant System
9. Dr Mohamad Nazim bin Jambli
   Mobile Wireless Sensor Networks
10. Rajan Thangaveloo
    Device to Device Communication, Network Security & 5G Future Cellular Network
11. Azlina binti Ahmadi Julaihi
    Mobile Ad-Hoc Networks & Trust Management
12. Ahmad Hadinata bin Fauzi
    Network Security & Cognitive Radio Networks
13. Noralifah Binti Annuar (study leave)

CSCT Research Activities

CSCT Poster Presentation

CSCT Poster presentation is a platform that enables Undergraduate and Post Graduate students to get valuable input form academic members. Moreover, this also gives an opportunity for all students and academics to understand and collaborate to improve their research quality. The awarded posters will be brought to be presented in the InTEX 2016 at the University level.

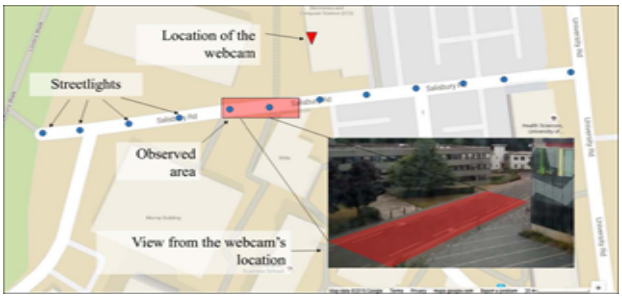
Familiarisation Hardware Training

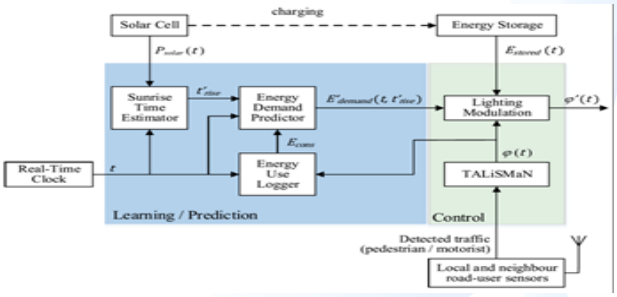
The main objective of this activity is to expose the academic members to the latest CISCO routing hardware that will be under the responsibility of FCSIT. The hardware also can be used for teach and learning purposes mainly for Internetworking Laboratory subject. This activities attended by 10 participants which include 2 staff from CICTS and Faculty Engineering staff respectively.

CSCT Research Highlights

Solar Power Adaptive Street lighting with Energy—Neutral and predictive behaviour

by Dr SeiPing Lau



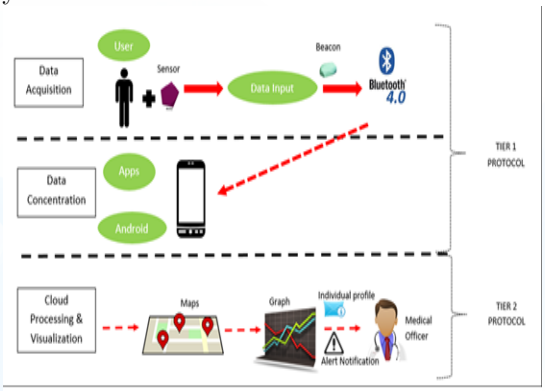


Street lighting is an important resource. It has been shown to reduce crime, improve road safety, and increase economic activity. These benefits, however, come with a cost: an annual emission of 64 million tonnes of CO2. Solar-powered street lighting is attractive for its use of renewable energy and its ease of installation (particularly in off-grid applications).

Problems with solar-powered street lights: limited energy storage; and variable energy budget due to weather conditions. As a result, large solar panels and energy storage are required to provide a reliable source of light throughout the night. This leads to an oversized and thus over priced system. Consequently, some had considered these street lights to be not cost effective and visually intrusive.

Data Dissemination protocol for Early Detection of Dengue Fever Attack using IoT

by Dr Halikul Lenando and Azizul Ali



This research focuses on designing a new communication protocol to detect an early attack of Dengue Fever. We monitor the user attached with sensor devices and will notify nearby medical officer or hospital if any symptoms such as sudden onset fever. This sensor devices support mobility and able to locate the current and past visiting places. Knowing where and when the disease outbreak happen will eventually help in other approaches such predictive surveillance which totally rely on data quality and reliability.

Ubiquitous Smart Low cost Networking for Rural Remote Telemetry

by Kuruvilla Mathew, AP Dr. C.E. Tan

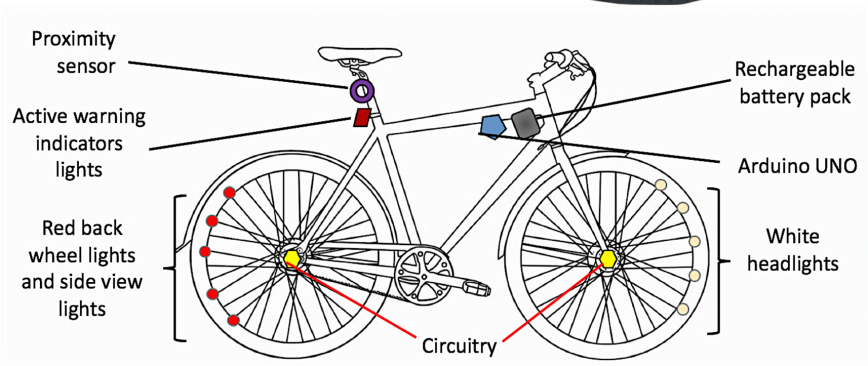
The rural area covered by thick foliage is presnts an uphill task for network connection as the signal attenuation is very high in foliage. This issue is noticed with mobile phone networks operating from about 900 MHz to 1800 MHz, to WiFi and Bluetooth signals operating at 2.4 or 5 GHz. Physical wired connectivity is even more challenging in such terrains due to obvious reasons. Therefore, a number of sub-systems installed in such terrains (Including sensor networks) face connectivity and telemetry challenges. Another challenge faced is the skillset of possible operators of the network, as it is usually quite low tech. Hence it is also desirable that the network should have some self-maintaining or managing skills, in order to improve system acceptability.

The proposed system will make use of alternate signals that are known to penetrate in such environments. In a specific rural village identified, situated about 1 hour travel by boat from the nearest town, even though is devoid of network enabled signals, still receives FM radio and TV signals. Traditionally, we are aware of other communications based on TOM TOMs (drum beats) used by tribes to signal among each other. Hence the proposed system tries to make use of such signals to bring connectivity, and provide smart capabilities in order to make the networks more manageable. The focus area for this research is telemetry.

CSCT Research Highlights

Cycle Sense Sensor-based Bicycle Safety System

by Dr. Johari Abdullah and Kho Khai Li



The objective of this project is to build a mobile app which can interface with the Arduino proximity sensors to notify the cyclist on oncoming vehicles that could pose danger to the cyclist nearby. When the proximity sensor detects nearby vehicles, the signal will be sent to the app and the app will send the signal back to the brake lights to increase the intensity of the red light and also blink the light in higher frequency so the oncoming cars will be alerted by the visual stimuli from the bicycle. Besides that, a turn signal light will also be installed on the bicycle to indicate that the cyclist is turning, to improve visibility of the cyclists to other vehicles.

Sarawak Traditional Food Locator using Mobile Apps

by Ahmad Hadinata Fauzi and Dr Dayang NurFatimah Awang Iskandar

The number of tourists that come to Sarawak increase every year. One of the attractions for tourist to visit Sarawak is the unique local and traditional cuisines. Sarawak offers various foods that origin from of many different ethnics. However, visitors are not familiar with the location and how to go about in Sarawak. They need assistance in locating places of interest such as tourist location and dining places. A mobile application that can help them to find and get to the nearest or desired place of eating is one solution. Furthermore, not all local people of Sarawak know all the eating places. Therefore, Sarawak Food Locator mobile application is created to guide, to recommend and navigate users from their current location to various eating place in Sarawak. This application will implement algorithm for recommendation system and decision support system to suggest various choices of cuisine to the users based on locality, rating by other users, calorie count information for health monitoring and user preferences. This research project is funded under the Nusantara Chair Grant by the Institute of Borneo Studies, UNIMAS.

Department of Computational Science and Mathematics

The Department of Computational Science and Mathematics currently consists of researchers whose research field ranges from applied mathematics, bioinformatics, computing and operational research. The department is home to researchers and academicians who have wide interests in computer science, engineering and sciences. It is the aim of the department to enhance contacts between mathematicians, statisticians and computer scientists at the university and research scientists in industry. The department's main mission is to conduct research in collaboration with industry on topics motivated by industrial applications, and to provide assistance to industry.

The department also offers one major in the undergraduate program, which is the computational science major. The students in the computational science program will gain an understanding of science principally through the use and analysis of mathematical models on high-performance computers. It is the department's hope to raise the profile of the mathematical sciences in the student population. The department is also responsible for the contents of relevant undergraduate courses: Discrete Mathematics, Statistics, Linear Algebra, Calculus, Differential Equations, Statistical Data Analysis, Computational Science Laboratory, Numerical Methods, Parallel Processing, Operational Research, Mathematical Modeling and Simulation.

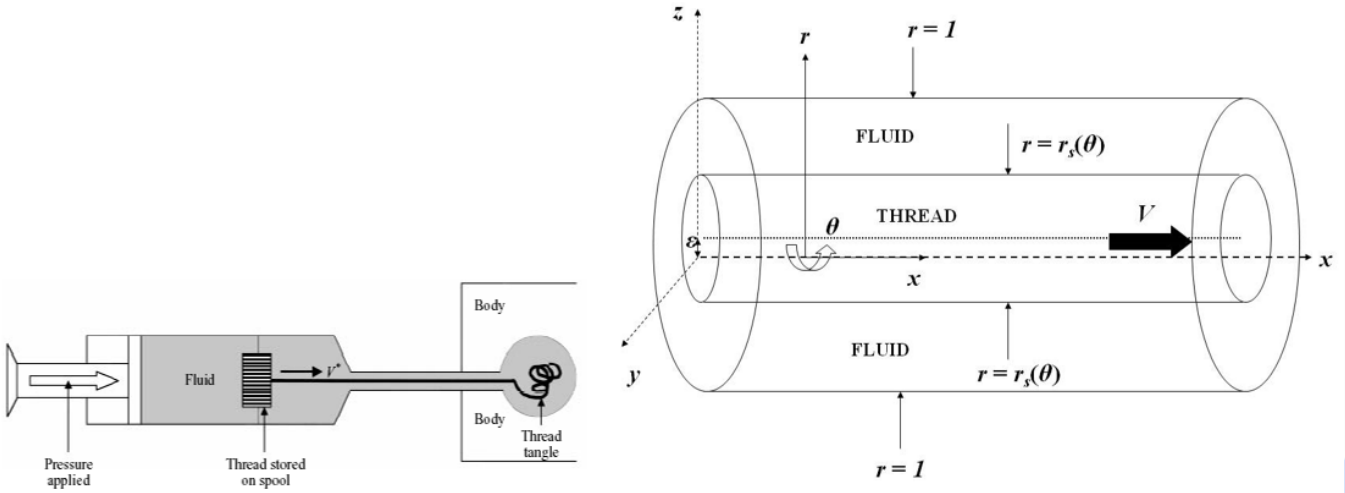
The term computational science is currently well known as an inter-disciplinary field. It is a bridge connecting computing and mathematics technology with the sciences; but it is also a discipline of its own. The department priority areas lie on : (1) Mathematical modeling which includes modeling of fluid dynamics, modeling of epidemics and diseases and numerical studies, (2) Statistical modeling includes bioinformatics and data analysis, (3) Combinatorial optimization.

CSM Academic Members

1. Dr Chiew Kang Leng, Head of Department
   Information security
2. Dr Tiong Wei King, Program Coordinator
   Nonlinear waves
3. Assoc. Prof. Dr Jane Labadin
   Mathematical Modeling
4. Dr Shapiee Abdul Rahman
   Industrial Statistics
5. Dr Sze San Nah
   Operational research & Scheduling
6. Dr Hamimah binti Ujir
   Computer Vision & 3D Face Analysis
7. Dr Nuha binti Loling Othman
   Free Boundary Problem, Variational Inequality, Mathematical Analysis
8. Dr Sarah Flora Anak Samson Juan
   Speech Processing, Language Modelling, Mathematical Modelling
9. Terrin Lim
   Bioinformatics - Data Mining
10. Izzatul Nabila bt Sarbini
    Cryptography
11. Ling Yeong Tyng (study leave)
12. Phang Piau (study leave)
13. Sze Jeeu Fong (study leave)

CSM Research Highlights

Mathematical Modeling of Thread-Annular Flow



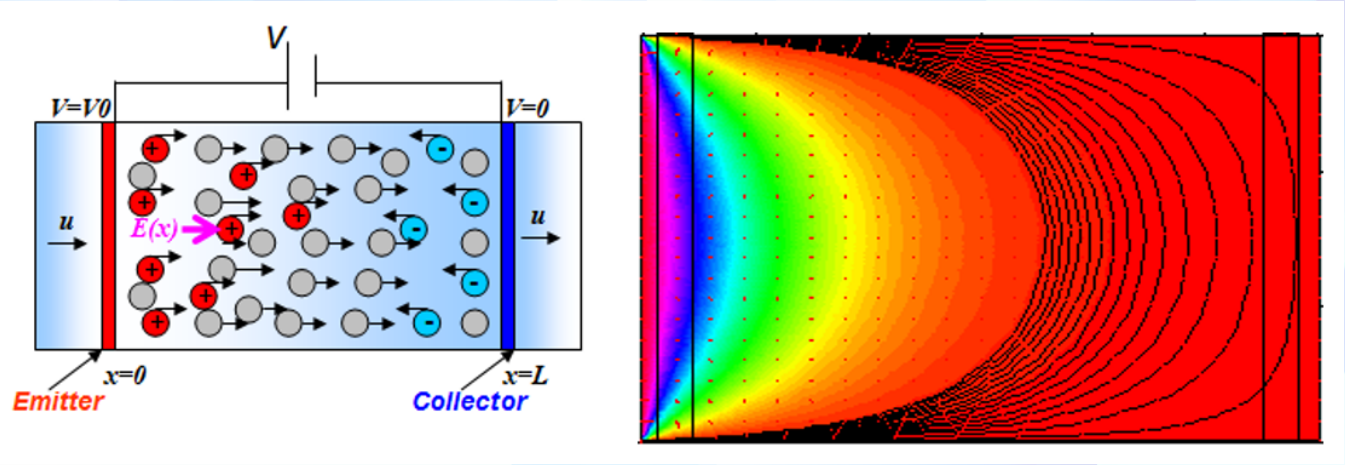
Thread injection procedure is a surgical technique that allows the injection of porous medical implants into the body in a minimally invasive way.

The research is particularly interested on the mathematical modelling of the thread injection by considering the incompressible and steady flow between eccentric cylinders. The mathematical modelling of this application is presented using non-dimensional Navier-Stokes equations and the governing equation is solved analytically.

3D Wind Prediction within Sarawak Highlands

This project will focus on the mathematical modelling of high Reynolds number fluid flow encountering multiple obstacles since terrains can be modelled as multiple objects within the atmospheric boundary layer. And, it is important to keep in mind that the behaviour of the atmospheric boundary layer is significantly influenced by topography.

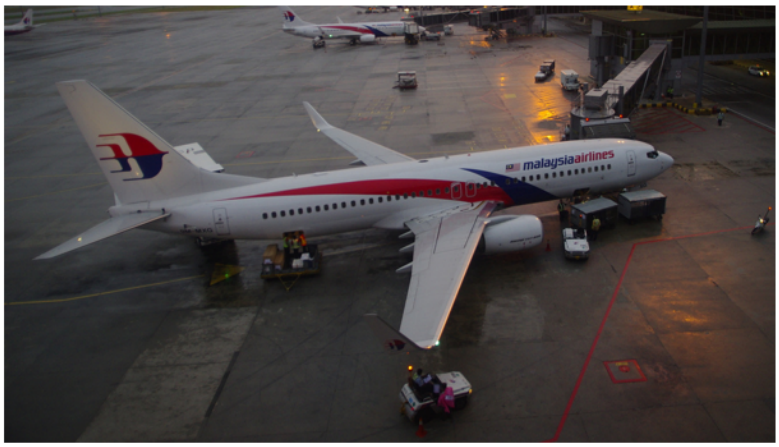
Mathematical Modeling and Simulation of EHD Ion-Drag Micropump for Optimum Performance



To study and analyze numerically the EHD pumping phenomenon in an ion-drag micropump by determining its characteristics and design geometry effect on its pumping performance.

CSM Research Highlights

In-flight food delivery Manpower Scheduling



A group of loading teams with flexible shifts is required to deliver and upload packaged meals from the ground kitchen to aircrafts in multiple trips. All aircrafts must be served within tight time windows by considering truck capacity. Given the aircraft arrival and departure schedule at an airport and predefined number of working hours for each team, including a 1 hour break, we propose a scheduling model to minimize the number of loading teams required.

Empty Containers Repositioning Model at Regional Level

The container entire flow, from the time of vessel arrival to the time that containers are picked up by exporter, can be considered as the company's supply chain of containers. The three critical points of decision that need to be investigated are (i) What is the base (safety) stock level? (ii) What is the total number of empty containers that need to be sent for surveying and the optimal maximum repairing cost? (iii) What is the number of containers that need to be assigned to be sent to a depot after unloading?

An Optimisation and Control Technique for Minimising Electricity Wastages

This research investigates the potential of applying different control measures on low power and high power appliances with the goal of evolving efficiency in electricity consumption. The research involves carrying out simulations on their power consumption readings to set up a control system. The study discovers savings on all appliances under study to be 12.8% Kw, not minding occupancy rate of the building. Air-conditioners have the greatest impact of a 6% Kw contribution on savings. This would lead to a substantial contribution when converted to pricing rates

ACTIVITIES, EVENTS & TALKS

Journal & Publication Workshop

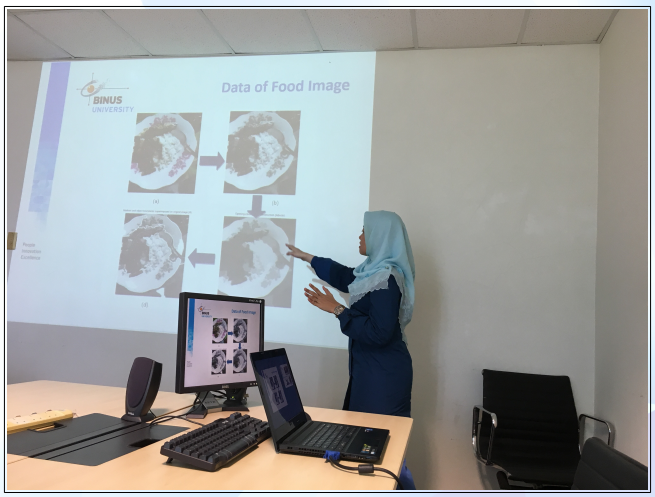
A "Smart Publishing Game In ISI-WoS, Scopus, Era and Open Acess Indexed Journals for FCSIT Academics" was conducted on 17-19 February 2016. The three day workshop comprises of theory and hands-on sessions. The theory sessions includes: Introduction & Issues in Journal W&P; Journal Abstracting, Indexing, Classification, Selection, Source and Search; and Journal Writing Tips and Game. The hands-on sessions concentrated on drafting, writing, editing, reviewing and proofreading journal papers.

Inaugural Lecture: Leveraging Research and Innovation in ICTS for Socio-Economic Development in Malaysia

The Faculty of Computer Science and Information Technology at Universiti Malaysia Sarawak (UNIMAS) proudly hosted the Inaugural Lecture by Professor Dr Alvin Yeo Wee, Director of ISITI and an established academic at the university in the field of Information Systems and in the field of Information and Communication Technologies for Rural Development. He has been involved in in over 40 research and development projects; 30 in employing ICTs and telecentres to bring about socio-economic development.

His Inaugural Lecture entitled "Leveraging Research and Innovation for Socio-Economic Development in Malaysia" highlights the various ICT for Rural Development projects that ISITI has been involved in since 1999, all of which has aimed in developing pathways towards academic and socio-economic impacts. Two projects, eBario and eLamai, was presented to demonstrate the ripple effect of the holistic multi-sectorial, multidisciplinary and participatory approach in not only creating socio-economic impact to the communities involved but also generating research and innovation opportunities in areas of anthropology, renewable energy, indigenous knowledge management, indigenous tourism, and traditional handicraft making.

UNIMAS-BINUS University International Staff Exchange Programme



FCSIT hosted Dr Lili Ayu Wulandhari from School of Computer Science, BINUS University. The two week International Staff Exchange Programme involved activities such as teaching, discussion on joint research, information sharing sessions (for students and academic staff) and sit-in classes.

Software Birthmark and Research Collaboration

Assoc. Prof. Dr Norma Binti Alias, Center for Sustainable Nanomaterials, Ibnu Sina Institute for Scientific and Industrial Research, Universiti Teknologi Malaysia visited FCSIT. She presented her research and found several collaborators.

ISITI Research Projects

(1) The Workflow for TACIT Knowledge Transfer Across Service Learning Offerings

PI: Prof. Dr. Narayanan Kulathuramaiyer
Researchers: Dr. Stephanie, Dr. Dyg Hanani, Mdm Dyg Zawiyah and Prof. Dr. Roger Walton Harris. *"The objective of this research is to develop a workflow for collecting and managing students' feedback and learnings specific to a particular community."*

(2) Building Machine Readable Dictionaries by Unifying the Structures of Indigenous Language Dictionaries Using Formal Grammar and XML

PI: AP Dr. Ranaivo-Malançon Balisoamanandray
Researchers: Mdm Suahila Saee, Mdm Rosita Bte Mohamed Othman and Ms Jennifer Fiona Ak Wilfred Busu. *"This study aims to build a unified structure of MRD using formal languages for data extraction and merging, XML for data representation, and dictionary writing systems for extrinsic evaluation."*

(3) Corpus Building for a Multilingual Automatic Speech Recognition System

PI: Dr Sarah Flora Ak Samson Juan.
Researchers: Mdm Suahila Saee, Mdm Rosita Bte Mohamed Othman and Ms Jennifer Fiona Ak Wilfred Busu. *"Documenting a language is important for discovering linguistic properties and indirectly could help to preserve a language's identity. This project aims to build corpora, in Sarawak languages for future automatic speech recognition system (ASR) development and research."*

(4) Deployment of ICT and the Long Lamai Community: A Responsible Innovation Approach

PI: Dr Tariq Zaman.
Researchers: Prof Dr Narayanan Kulathuramaiyer, Dr John Phua, Dr. Johari Abdullah & Gary Loh Chee Wyai. *"The project will develop an empirically based and theoretically sound model of the role of responsible innovation governance."*

(5)The Global Citizenship and Sustainability Program: Service-Learning and Community-Based Research in Borneo

PI: Dr. Tariq Zaman.
Researchers: Prof. Dr. Narayanan, Prof. Dr. Alvin Yeo Wee & Prof. Dr. Roger Walton Harris. *"Through participatory approaches involving GCS students from Cornell and Universiti Malaysia Sarawak, we collaborated with community to identify which dimensions of resilience could be utilized to avert the most serious threats and how the drivers of change could be channeled towards strengthening community resilience."*

(6) Handicraft Development for Penan Artisans in Tegulang Resettlement, Murum

PI: Project Leader: AP Dr. June Ngo Siok Kheng.
Researchers: Prof. Dr Narayanan Kulathuramaiyer, Dr John Phua, Dr. Tariq Zaman & Prof. Dr Alvin W. Yeo. *"This project aims to develop sustainable economic solutions for the resettled indigenous Penan community in the Murum region through handicraft development."*

The Fifth eBorneo Knowledge Fair

The Institute of Social Informatics and Technological Innovations (ISITI-CRI) successfully organised the fifth eBorneo Knowledge Fair 2015 (eBKF5 2015) which ran from 18-20 November 2015. The knowledge fair marked yet another milestone for ISITI as this was the first time that ISITI organised the knowledge fair in Ba'Kelalan, the Heart of Borneo.

The three-day event began with the postgraduate colloquium, which saw the attendance of both local and international postgraduate students from various countries such as the United Kingdom, Sweden and Nigeria. The students presented the progress of their work in various areas of Information and Communication Technology for Development (ICT4D), all of which were relevant to the goals and objectives of the knowledge fair which is to promote research that innovates with technologies in order to address the challenges and opportunities that remote and isolated indigenous communities face.

Several workshops were also organised, namely *"Community Radio"*, which was facilitated by Professor Dr Roger Harris, a visiting professor from UNIMAS, together with local champions Stanley Issac and Cr. John Tarawe, *"Engaged Learning"* and *"Climate Change and Indigenous Knowledge"*, which were overseen by Associate Professor Dr Shorna Broussard Allred and Amy Kuo Somchanhmavong, both from Cornell University, United States of America. Apart from that, the participants were also brought to explore the magnificent highlands of Ba'Kelalan.

ISITI ACTIVITIES, EVENTS & TALKS

ISITI research trip to Lundu

A team of researchers from ISITI recently organised a field trip to Lundu to conduct a feasibility study for a research project in Lundu. The team, together with researchers from various faculties in UNIMAS, also paid a visit to the Lundu District Office and met with the Lundu District Officer as well as other village heads and community leaders who shared valuable information with the research team on the background and demographics of the Lundu community. The team also visited two Pusat Internet 1 Malaysia sites located in Lundu.

Postgraduates Workshop Series

A continuous ISITI workshop related to ICT4D challenges and opportunities was conducted on the November 27, 2015 for postgraduate students by ISITI Visiting Professor—Prof Dr Roger Harris.

Talk Series

Three ISITI Talks Series were held with research visitors Dr Paul Leong, New Zealand; Prof Abhay Saxena, India; AP Dr Shourna Allred and Ms Amy Kuosomchamhamong, Cornell University.

Responsible Research and Innovation (RRI) Workshop

This workshop was conduted on the August 8, 2016 by Prof Dr Philippe Goujon and Dr Blagovesta Nikolova from UNAMUR University.

ISITI Postgraduate Students

1. Shaista Falak. Main supervisor: Professor Dr Alvin Yeo Wee; Co-supervisor: Prof. Dr Lo May Chiun. Title: Information System Framework for Sustainable Rural Tourism Development in Malaysia.

2. Ghazala Tabassum. Main supervisor: Prof. Dr Alvin Yeo Wee; Co-supervisor: Dr Mohd Faisal Syam Abdol Hazis. Title: The Influence of Telecentres on the Socio-Economic Aspects of the Community.

3. Nuredzan Binti Zaludin. Main supervisor: Dr Nadianatra Musa. Title: Security Governance in Remote Health System for Rural Communities.

4. Revelation Toluwation Yoloye. Main supervisor: Dr Jacey Lynn Minoi; Co-supervisors: Assoc. Prof. Dr Jane Labadin and Dr Nur Jaanah Abdullah @ Chew Li Hua (UM). Title: Impact and Importance of Health Information In Management and Delivery of Healthcare Services In Asia.

5. Law Fung Yee. Main supervisor: Prof. Dr Lo May Chiun. Title: Rural Tourism Development And Tourists Revisit Intensions: The Impact of Service Quality and Satisfaction.

6. Adam Mani Yangora. Main supervisor: Prof. Dr Alvin Yeo Wee Co-supervisors: Dr Tariq Zaman and Prof. Dr Narayanan Kulathuramaiyer Title: Reviving Nigerian Indigenous Culture Heritage Through The Use of Advance Information and Communication Technologies.

7. Ung Ling Ling. Main supervisor: Prof. Dr Alvin Yeo Wee Co-supervisors: Assoc. Prof. Dr Jane Labadin and Assoc. Prof. Dr Norazila Binti Abd Aziz. Title: In Research of Impacting Problem Solving Skills In Cultivating Computer Programming Skills Within Rural Area Kids.

8.Susan Thian Su Zhuang. Main supervisor: Prof. Dr Lo May Chiun Co-supervisor: Dr John Phoa Chiu Leong. Title: Sustainability Dimensions Towards Sustainable Tourism Development for the West of Sarawak.

9. Carolyne Alphonsus Binti Tommy. Main supervisor: Dr Jacey Lynn Minoi. Co-supervisors: Prof. Dr Alvin Yeo Wee and Prof. Dr Mohd Raili Bin Suhaili. Title: Phonetic Mobile App for Pre-School Children with Articulation Speech Impairment.

10. Franklin George. Main supervisor: Dr Tariq Zaman. Co-supervisors: Prof. Dr Narayanan Kulathuramaiyer. Title: Indigenous People And Participatory Visual Research Methods For Understanding Data Governance Issues In Digital Era.

11. Mohd Ismail Bin Jolhip. Main supervisor: Dr Jacey Lynn Minoi. Co-supervisors: Mr Terrin Lim. Title: Analysis of Shape Distortion Leading to 2D Shape Perservation for Image Stitching.

12. Goh Chu Hiang. Main supervisor: Prof. Dr Narayanan Kulathuramaiyer. Co-supervisors: Dr Tariq Zaman. Title: Sustaining Local Cultural Identity: An Integrated Cultural Sensitive Persona Framework Studies.

ISITI Awards

National, Best Paper Award, 6th Asia Pacific Marketing Management Conference: Local Communities' Relationship Quality and Economic Sustainability in Sarawak Rural Tourism Destination—Prof. Dr Lo May Chiun, Dr Peter, Dr Vikneswaran, Soon Fun Fong.

University Level, Silver Medal, Innovation Technology Expo 2016 (InTEX 16): Adeef Speech Therapy Mobile Apps—Dr Jacey Lynn Minoi, Carolyne Tommy.

University Level, Bronze Medal, Innovation Technology Expo 2016 (InTEX 16): Community-based Participatory Aerial Photograph using UAVs Ecosystem—Dr Jacey Lynn Minoi, Terrin Lim, Mohd Ismail Bin Jolhip.

Centre of Image Analysis and Spatial Technologies (IMAST)

Director: Prof. Dr. Wang Yin Chai

Established in 2007, IMAST is a forward looking Technology center which focuses on IT software development, business strategies planning and consultancy services. IMAST consultants and developers are highly trained professionally in order to meet clients' needs that are increasingly fickle and challenging. We have a proven track record in quickly understanding complex business requirements to be competitive and become the market leader in the Information Technology field. IMAST has a wealth of experience in Image Analysis and Spatial Technologies fields with several award winning products such as Content Based Image Retrieval Algorithm.

Research Projects

(1) Salcra ERP Data & information Management System - GST Module

PI: Prof Dr. Wang Yin Chai
Researchers: Prof. Dr. Lo May Chiun, Michael Tinggi and Peggy Loh Yee Wey.

(2) Software platform for Spatial Tourism Barometer Development

PI: Prof. Dr. Lo May Chiun
Researchers: Prof Dr. Wang Yin Chai and Lee Guan Heng.

(3) Weighbridge Information Management System-LAPOM 2

PI: Prof Dr. Wang Yin Chai
Researchers: Prof. Dr. Lo May Chiun and Peggy Loh Yee Wey.

(4) Weighbridge Information Management System-FFB Payment Module

PI: Prof Dr. Wang Yin Chai
Researchers: Prof. Dr. Lo May Chiun and Peggy Loh Yee Wey.

(5) Design and Development of Decision-making Apps for Identifying Resin-exude patterns and Resin Canals

PI: Prof Dr. Wang Yin Chai
Researchers: Dr. Sajid Khan, Lee Guan Heng and Dr Wang Hui Hui.

(6) Spatial Based E-Biodiversity For Monitoring, Conservation and Substainbility of Biodiversity of Western Sarawak Using Communities Participatory Approach

PI: Prof Dr. Wang Yin Chai
Researchers: Dr. Wang Hui Hui, Dr. Chai Soo See and Prof. Dr. Alvin Yeo Wee.

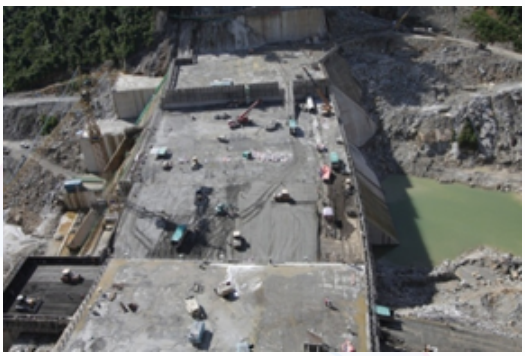
Collaborators

IMAST ACTIVITIES



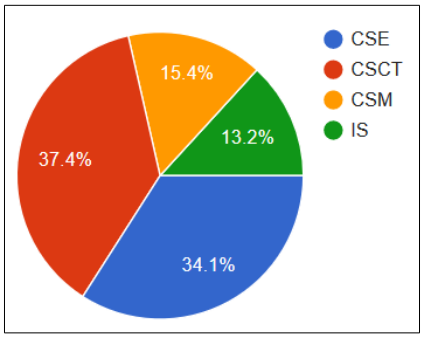

Oil Palm Estates Site Survey


User Training on Salcra ERP Data &
information Management System - GST Module

Site Survey Trip

FCSIT Postgradute Students



Department of Computer System & Communication Technologies

MSc Students:

1..Sanjay Charles Albert-Data Dissemination on Mobile Encounter Network, Main SV: Dr Halikul bin Lenando. **2. Nor Ras Amieerra bt Marzuki**-A Lightweight Data Hovering Algorithm for Information Discovery in Vehicular Ad-hoc and Sensor Networks (VASNETs), Main SV: Dr Halikul bin Lenando, Co-SV: Sinarwati Mohamad Suhaili. **3. Danny Wilson anak Mandai**-Intelligent Event Correlation Engine for Internet Performance Monitoring, Main SV: Dr Johari bin Abdullah, Co-SV: Dr Halikul bin Lenando. **4. Raza Zaman**-Comparative Analysis of IPV4 and IPV6 Protocols using Different Scenarios, Main SV: Dr Johari bin Abdullah, Co-SV: Dr Halikul bin Lenando. **5. Amanda anak Hendrick**-Energy-Aware Clustering Routing Algorithm for Mobile Ad-Hoc Sensor Networks, Main SV: Dr Mohamad Nazim bin Jambli, Co-SV: Dr Johari bin Abdullah. **6. Abdul Majeed Akhtari**-An Effective Data Hovering Algorithm for Data Aggregation and Dissemination to Support High Mobility in Vehicular Ad-Hoc and Sensor Networks, Main SV: Dr Mohamad Nazim bin Jambli. **7. Mohamad Hafiq Bin Mohamad Nadzri**-An Accurate Data Hovering Algorithm to Estimate Rainfall Using Vehicular Ad-Hoc Sensor Networks (VASNETs), Main SV: Dr Mohamad Nazim bin Jambli. **8. Azizul Bin Mohd Ali**-Dengue Fever Early Detection Protocol using Internet of Things (IOTs), Main SV: Dr Halikul bin Lenando. **9. Muhamad Nur Afnan Bin Shamsudin**-Remote Management Framework for Rural Self-Organize Network, Main SV: AP Dr Tan Chong Eng. **10. Kosheila AP Sundram Pillay**-A Cluster Based Dynamic Energy Efficient Routing Algorithm in MASNETs, Main SV: Dr Mohamad Nazim bin Jambli. **11. Navein AL Chanderan**-A Dynamic and Automated Signature Detection for Malware Analysis, Main SV: Dr Johari bin Abdullah. **12. Azizul Lau**-Smart Home for Elderly with Health Monitoring and Wireless Body Area Network (WBAN), Main SV: Dr Halikul bin Lenando. **13. Chiadighikaobi Ikenna Rene**-Automatic Network Attack Signature Generation for Detection System Improvement, Main SV: Dr Johari bin Abdullah. **14. Asylvester Anak John Juan**-Secure and Dynamic Multiple Junction Selection Routing Protocol in VANET, Main SV: Dr Adnan Shahid Khan. **15. Winny Anak Kaduka**-An Energy Efficient to Extend Network Lifetime by Dynamic Clustering Routing Algorithm in Mobile Ad-hoc Sensor Networks (MASNETs), Main SV: Dr Mohamad Nazim bin Jambli.

PhD Students:

1. Irshad Ahmed Abbasi-Intelligent Routing Algorithm for Vehicular Adhoc Networks, Main SV: Dr Adnan Shahid Khan, Co-SV: Dr Kartinah Bt Zen. **2. Siva Raja AL Sindiramutty**-Adaptive Usage Pattern Oriented Power Optimization for Multi-Input Hybrid Renewable Energy Power Supply System Applicable to Smart Rural Environment, Main SV: AP Dr Tan Chong Eng, Co-SV: Dr Lau Sei Ping. **3. Mohamad Ali Alrfaay**-Improved DTN Routing Protocol to Build Useful and Efficient Social Networks Application, Main SV: Dr Halikul bin Lenando, Co-SV: Dr Mohamad Nazim bin Jambli. **4. Rashad Mahmood Saqib**-Securing 5G Wireless Communication Networks, Main SV: Dr Adnan Shahid Khan, Co-SV: Dr Mohamad Nazim bin Jambli. **5. Mujahid Tabassum**- Improving Routing Algorithm based on Data Priority and Localization Techniques, Main SV: Dr Kartinah Bt Zen. **6. Colin Kueh Jui Siew**-Adaptive Network Switching Algorithm for Energy Saving on Mobile Devices, Main SV: Dr Tan Chong Eng. **7. Jee Kouk Hiong**-Adaptive Wireless Client Association for Optimizing Throughput Performance of Access Points in High Density Clients Environment , Main SV: Dr Tan Chong Eng. **8. Kuruvilla Mathew**-Communication Architecture Using Low Frequency Transmission for Low Bandwidth and Cost Effective Remote Telemetry, Main SV: AP Dr Tan Chong Eng. **9. Najm Us Sama**- Energy Efficient Routing Technique's in Wireless Sensor Network, Main SV: Dr Kartinah Bt Zen. **10. Ahmad Hadinata Bin Fauzi**-Mitigating MAC Layer Security Threats for Mobile Multihop Relay WiMAX Networks, Main SV: Dr Adnan Shahid Khan. **11. Sia Chiu Shoon**-A Hybrid Framework of Vehicular Ad-Hoc Sensor Network (VASNET) with Internet of Thing (IOT) to Provide a Context-Aware Communication for Search and Rescue Operation, Main SV: Dr Mohamad Nazim bin Jambli. **12. Aref Hassan Kurdali**-A New Algorithm to Enhance DTN (Delay Tolerant Networking) PROPHET routing Protocol, Main SV: Dr Halikul bin Lenando. **13. Rajan Thangavelo**-D2D Group Rekeying Security Model for 5G Cellular Network Main SV: Dr Adnan Shahid Khan. **14. Abdalla Hassan Gharib**-Social-based Neighbor Selection Protocol for Prioritized Heterogeneous Information Dissemination in Opportunistic Network, Main SV: Dr Halikul bin Lenando , Co-SV: Dr Adnan Shahid Khan. **15. Nayeem Ahmad Khan**-Vulnerability Prevention Model for Web Browsers, Main SV: Dr Johari bin Abdullah, Co-SV: Dr Adnan Shahid Khan. **16. Yasir Javed**-NanyBot: A Health Care Bot, Main SV: Dr Adnan Shahid Khan, Co-SV: Dr Edwin ak Mit. **17. Waheed Ud Din**-Web based Automatic Parallel Processing Environment for Mathematics, Main SV: Dr Halikul bin Lenando, Co-SV: Dr Jane Labadin. **18. Abdul Qahar**-Energy Efficient Protocol in 5G Heterogeneous Mobile Network, Main SV: Dr Adnan Shahid Khan, Co-SV: Dr Johari bin Abdullah. **19. Yong Yueh Tiam**-Efficient MAC Algorithm for Wireless Sensor Network in Rural Application, Main SV: AP Dr Tan Chong Eng, Co-SV: Dr Kartinah Bt Zen.

Department of Information Systems

MSc Students:

1. Abrar Noor Akramin Bin Kamarudin- Personalization of Internet Access for Indiegnous Communities, Main SV: AP Dr Ranaivo-Malançon, Bali., Co-SV: Dr Nadianatra Musa. **2. Fong Kwong Seng**-A Question and Answering System Based on a Generative Model to Support Physic Learning Unit, Main SV: Dr Bong Chih How. **3. Linda Wong Lin Juan**-Towards Computational Methods for Meta-Analysis: Automatic Detection of Synonymous in Variables, Main SV: Dr Bong Chih How, Co-SV: Dr Johari Abdullah. **4. Faizol Bin Mohd Suria**-The Modified Data Classification Version of Bacterial Foraging Swarm Optimization Algorithm, Main SV: Dr Mohammad Bin Hossin, Co-SV: Dr Stephanie Chua Hui Li. **5. Khairunnisa Binti Ibrahim**-Analysis of Visual Network Representation of Printed Historical Documents, Main SV: AP Dr Ranaivo-Malançon, Bali., Co-SV: Terrin Lim. **6. Ajibola Omoniyi Victor**-Modified Prototype-based Genetic Algorithm Classifier for Large Datasets, Main SV: Mohammad bin Hossin, Co-SV: . **7. Kuan Pei Nei**-Classification of Skin Burn Degree, Main SV: Dr Stephanie Chua Hui Li, Co-SV: Dr Wang Hui Hui & Dr Ehfa Bujang Safawi (FMHS). **8. Hazimah Binti Iboi**-A Novel Text Summarization Method Based on Story Plot Structure , Main SV: Dr Stephanie Chua Hui Li, Co-SV: Prof Dr Narayanan Kulathuramaiyer & AP Dr Ranaivo-Malançon, Bali. **9. Wan Muhammad Faisal Bin Wan Tamlikha**-A Hybrid Information Extraction for Historical Documents, Main SV: AP Dr Ranaivo-Malançon, Bali, Co-SV: Dr Stephanie Chua Hui Li.

PhD Students:

1. Din Azizud-Generating Pashto Clitics, Main SV: AP Dr Ranaivo-Malançon, Bali, Co-SV: Prof Dr Alvin Yeo Wee (University of Waikato, NZ). **2. Wong Wee Sian**-Intelligent Essay Grader (IEG): An Automated Essay Scoring based on Malaysian University English Test (MUET), Main SV: Dr Bong Chih How, Co-SV: Dr Stephanie Chua Hui Li.

3. Wendy Tan Wei Syn-Recognizing Textual Entailment by Identifying Directional Correlation in Vector Space Model, Main SV: Dr Bong Chih How.

Department of Computing & Software Engineering

MSc Students:

1. Eileen Yap Pin Pin-An Image Processing Approach for left Venticle (LV) Epicardial and Endocardial Borders Detection using Magnetic Resonance Imaging (MRI) Images, Main SV: Prof. Dr Wang Yin Chai, Co-SV: Dr Jacey Lynn Minoi. **2. Shane Nissom**-A Sustainability model for E-Tourism Mediated by Agent Technology, Main SV: Dr Cheah Wai Shiang, Co-SV: Prof Dr Narayanan A/L N. Kulathu Ramaiyer. **3. Ng Boon Ding** -Formal Fuzzy Approach for Defining Knowledge Repository for Indigenous Community, Main SV: AP Dr Edwin ak Mit. **4. Siti Hazemah binti Hassan** -Application of Artificial Bee Colony Algorithm (ABC) in Classifying Piper Nigrum, Main SV: Dr Dayang NurFatimah bt Awg Iskandar, Co-SV: Norfadzlan bin Yusup. **5. Liauw Hephi**-An Optimal Data Driven Model for Soil Moisture Retrieval Using Microwave Remote Sensing Data, Main SV: Dr Chai Soo See. **6. Suresh AL Ramachandran**-System Property Preservation under Refinement in Integrated Formal Specifications, Main SV: Dr Azman Bin Bujang Masli. **7. G M Al-Imran**-A Critical Analysis of Current E-Commerce Logistics Systems: An Approach to Develop an Efficient E-Commerce Logistics Solution, Main SV: AP Dr Edwin ak Mit, Co-SV: Syahrul Nizam bin Junaini. **8. Yafra Khan**-Water Quality Analysis using GIS Mapping, Spatial Modeling and Statistical Methods, Main SV: Dr Chai Soo See, Co-SV: Dr Wang Hui Hui. **9. Wong Swee Yin**-Formalize Use Case to Model the Uncertainty of Fuzzy Scenario, Main SV: AP Dr Edwin ak Mit, Co-SV: Jonathan anak Sidi. **10. Tan Mei Synn**-AR Natural Marker Similarities Measurement Algorithms for E-Biodiversity Features Matching, Main SV: Prof Dr Wang Yin Chai. **11. Kiu Siew Ming**-Detection and Classification White Blood Cells for Leukemia Using Image Processing Approach, Main SV: Prof Dr Wang Yin Chai. **12. Kayathiri A/P Batumalai**-Responsible Rural Tourism Ontology , Main SV: Prof Dr Narayanan AL N. Kulathu Ramaiyer, Co-SV: Dr Dayang Nurfatimah bt Awg Iskandar. **13. Panceras Talita Anak Majang**-Building WordNet for Minority Languages: A Comparison of Word Similarity Measure Metrics, Main SV: Prof Dr Narayanan A/L N. Kulathu Ramaiyer. **14. Elly Anak Stephen**-Formal Platform for Assessing Quality of Heterogeneous Software Requirements, Main SV: Dr Edwin ak Mit. **15. Marcella Peter**-Facial Expression Synthesis using Kernel Approach, Main SV: Dr Jacey Lynn Minoi, Co-SV: Dr Irwandi Hipni Bin Mohamad Hipiny. **16. Fiona Anak Kandou**-Image Enhancement for Counting Bacterial Colonies in Petri Dish, Main SV: Dr Jacey Lynn Minoi. **17. Lilyana Anak Jelai**-An Enhancement of Textual Analysis Process by using Knowledge-based Word Sense Disambiguation Methods, Main SV: AP Dr Edwin ak Mit, Co-SV: Dr Sarah Flora Anak Samson Juan.

PhD Students:

1. Lee Beng Yong-Spatial-based Automated Terrace Generation Algorithms for Land Clearing Based on Grid and Terrace Planting, Main SV: Prof Dr Wang Yin Chai, Co-SV: AP Dr Noor Alamshah B. Bolhassan & Dr Cheah Wai Shiang. **2. Liew Lee Hung**-An Intelligent Approach for Extracting Oil Palm Prunes Information from High Resolution Satellite Images for Nutrition Status Classification & Segmentation, Main SV: Prof Dr Wang Yin Chai , Co-SV: Dr Cheah Wai Shiang. **3. Muhammad Arshad Javed**-Brain Tumor Detection and Classification Using Machine Learning from MR Images, Main SV: Prof Dr Wang Yin Chai, Co-SV: Prof Dr Narayanan AL N. Kulathu Ramaiyer. **4. Aftab Ahmed Abbasi**-Database Integration using Semantic Web Approach , Main SV: Prof Dr Narayanan AL N. Kulathu Ramaiyer, Co-SV: Dr Adnan Shahid Khan. **5. Amjad Khan**-Cardiac MRI Segmentation for Oedema Assessment, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar, Co-SV: Prof Dr Wang Yin Chai. **6. Imam Bakhsh**-Digital Watermarking in Multi-Biometrics Domain: Cross-Authentication for 4-tier Intergrated Security, Main SV: Prof Dr Wang Yin Chai. **7. Suriani Binti Ab Rahman**-Development of Multi-Class Classifier for Classifying Psychiatric Disorders, Main SV: Dr Jacey Lynn Minoi, Co-SV: Hamimah binti Ujir. **8. Rukshanda Kamran**-Cloud Computing Applications and Security Threats, Main SV: AP Dr Noor Alamshah B. Bolhassan, Co-SV: Dr Nadianatra binti Musa. **9. Pui Suk Ting**-Automatic Landmarking on 2.5D Range Images, Main SV: Dr Jacey Lynn Minoi. **10. Leon Wilfred**-Semantic Web Technology for Cardiac MRI Representation, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar. **11. Abd Almalik Rahhal**-Color Image Steganography, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar. **12. Ghazanfar Latif**-Brain Tumor Analysis and Classification of Brain MR Images over Cloud, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar. **13. Maimoona Salam**-Integrating Technologies in Service Learning: A Case Study of Computer Science and Information Technology Courses, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar, Co-SV: Dr Dayang Hanani bt Abang Ibrahim. **14. Mohammad Zuhier Badie' Hourani**-Medical Image Steganography, Main SV: Dr Dayang Nurfatimah bt Awg Iskandar.

Department of Computational Science & Mathematics

MSc Students:

1. Ismas binti Ismail-Spatial-Temporal Model for Transmission of P. Knowlesi Malaria in Sarawak, Main SV: AP Dr Jane Labadin, Co-SV: Dr Angela Siner. **2. Chang Ee Hung**-Phishing Detection by Website Identity Identification Via Online Search Engine, Main SV: Dr Chiew Kang Leng. **3. Tin Tze Chiang**-Evil Twin Attack Detection in 802.11 Wireless Networks, Main SV: Dr Chiew Kang Leng, Co-SV: Dr Sze San Nah. **4. Chan Sze Jan**-Hand, Foot and Mouth Disease (HFMD) in Kuching, Sarawak: Modeling and Preventive Measure, Main SV: AP Dr Jane Labadin, Co-SV: Dr Yuwana Podin. **5. Kok Woon Chee**-Computational Approach in Predicting the Spread of Dengue, Main SV: AP Dr Jane Labadin, Co-SV: Prof Madya Dr David Perera (IKPK). **6. Nurul Amalina Binti Abu Bakar**-Repositioning of Empty Container, Main SV: Dr Sze San Nah. **7. Halimatul Sa'adiah Binti Ja'ffar**-Modeling Measles Transmission and Vaccination in Malaysia, Main SV: AP Dr Jane Labadin. **8. Phang Min Hui**-Web Based Final Examination Scheduling System, Main SV: Dr Sze San Nah, Co-SV: Dr Chiew Kang Leng. **9. Doreen Sek Siaw Ying**-Empty Containers Management, Main SV: Dr Sze San Nah, Co-SV: Dr Tiong Wei King.

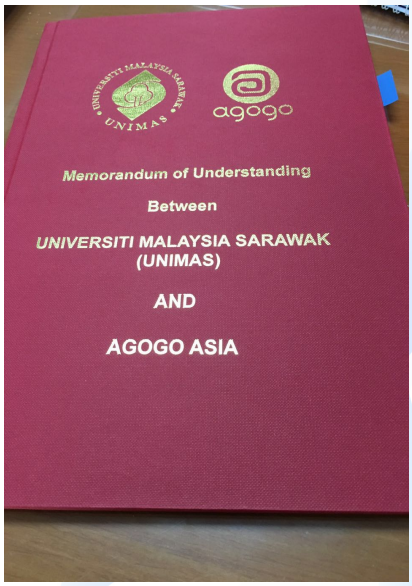
PhD Students:

1. Yiiong Siew Ping-Mathematical Modelling of the Wind Flow Over Terrains, Main SV: Dr Jane Labadin. **2. Cynthia Kon Mui Lian**-Modeling Generic Transmission Model for Mosquito-Borne Infectious Diseases, Main SV: AP Dr Jane Labadin. **3. Sulaiman Muhammad Aliyu**-Addressing Uncertainty In Well Logs Dataset For Machine Learning Modeling, Main SV: Dr Jane Labadin. **4. Lee Kong Weng**-Rostering and Scheduling Solution for Airline's Ground Staff, Main SV: Dr Sze San Nah, Co-SV: Dr Chiew Kang Leng. **5. Ozoh Patrick**-Stochastic Modeling of Network Performance for Large-Scale Systems with QoS Constraints, Main SV: Dr Shapi-ee bin Abd Rahman, Co-SV: AP Dr Jane Labadin.

Hi Tea Birthday Bash 2015

Gunung Gading National Park Trip

New Memorandum of Understandings in 2016



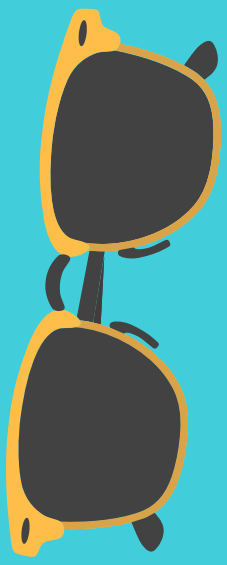
(a) AGOGO ASIA on May 12, 2016
The MoU invloves 1) Collaborative research 2) Training and workshop 3) Joint consultancies.

(b) Pustaka Negeri Sarawak on November 4, 2016
FCSIT and Pustaka Negeri Sarawak will develop computing applications that facilitate information processing, retrieval and accessibility. One of the pilot projects is "Library in a Box" that empowers information access for rural communities.

(c) Sarawak Information Systems Sdn Bhd on September 5, 2016
Collaborations for Industrial Training placement; engaging and supplying final year students with real world projects and problem; collaborative research projects between SAINS and FCSIT; trainings and workshops; and joint consultancies.

Existing MoU/MoA

- Kuramae Sdn Bhd
- International Malaysia Education Center (IMEC) under UHSB
- International Islamic University Malaysia
- Malaysian Software Testing Board (MSTB)



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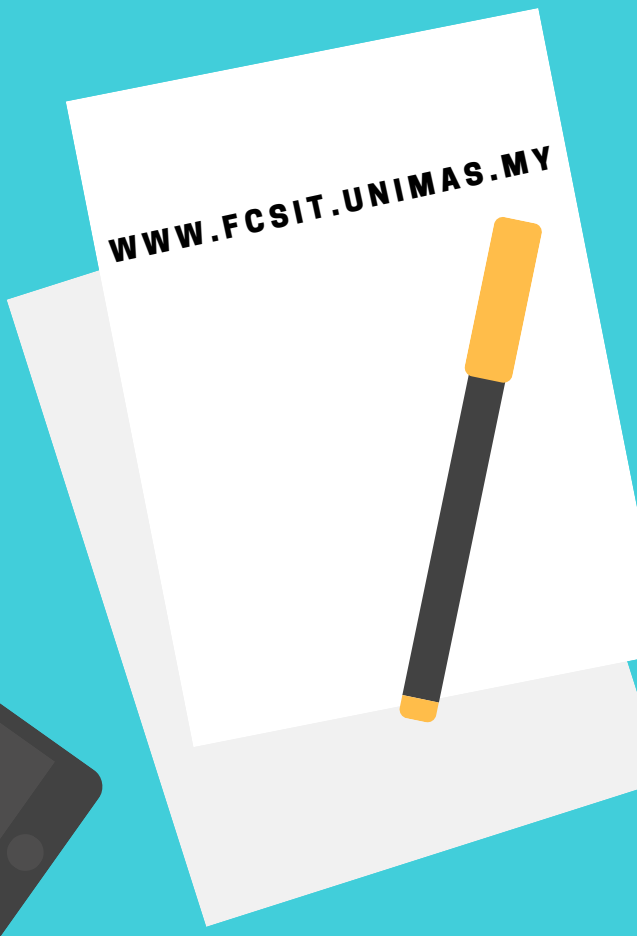

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